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Journal of Educational Research

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JOURNAL *of* EDUCATIONAL

CORRECTION

*** October, 1944, issue, page 94, last sentence in item 7 should be corrected to read as follows:**

"These facts confirm an earlier conclusion, that research on the relationships of reading and problem solving in arithmetic should be in terms of specific reading skills, rather than in terms of general reading ability."

Number 3

LEVEL OF

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of achievement

differences in achievement [illegible]

in college two tests were used, the Michigan Vocabulary Profile Test and the Graduate Record Examination. Three possible causes were investigated: the intelligence of students, the cultural background of students, and the amount of scholarly production by faculty members. As a measure of intelligence the Henmon–Nelson Test of Mental Ability for College Students was used. As a measure of cultural background, a test prepared for the purpose by the writer was used. As a measure of scholarly production, the number of titles of papers or exhibits published between July 1, 1939, and June 30, 1941 was used. Because of the difficulties of making a comparative study, the investigation was limited to two state liberal arts colleges, called K and M.

College K, founded as a teachers college in 1902 but converted into a state liberal arts college in 1931, is located in an agricultural area near the western border of the central middle west. College M, a liberal arts college organized as a part of a long-established university, is located in the north-eastern part of the middle west, and draws most of its students from industrial and urban centers.

The Michigan Vocabulary Profile Test, prepared by Dr. Edward B. Greene of the University of Michigan, is a multiple-choice vocabulary test consisting of thirty important words selected from each of eight fields: human relations, commerce, government, physical sciences, biological sciences, mathematics, fine arts, and sports. Since this test was standardized with a large sample of students from College M the test medians were assumed to

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JOURNAL *of* EDUCATIONAL RESEARCH

Volume XXXVIII NOVEMBER, 1944 Number 3

WHY DO SOME COLLEGES REACH A HIGHER LEVEL OF ACHIEVEMENT THAN OTHERS?

HOMER B. REED
Ft. Hays Kansas State College

IT IS the problem of this paper to find some of the factors that cause differences in achievement between colleges. As a measure of achievement in college two tests were used, the Michigan Vocabulary Profile Test and the Graduate Record Examination. Three possible causes were investigated: the intelligence of students, the cultural background of students, and the amount of scholarly production by faculty members. As a measure of intelligence the Henmon–Nelson Test of Mental Ability for College Students was used. As a measure of cultural background, a test prepared for the purpose by the writer was used. As a measure of scholarly production, the number of titles of papers or exhibits published between July 1, 1939, and June 30, 1941 was used. Because of the difficulties of making a comparative study, the investigation was limited to two state liberal arts colleges, called K and M.

College K, founded as a teachers college in 1902 but converted into a state liberal arts college in 1931, is located in an agricultural area near the western border of the central middle west. College M, a liberal arts college organized as a part of a long-established university, is located in the northeastern part of the middle west, and draws most of its students from industrial and urban centers.

The Michigan Vocabulary Profile Test, prepared by Dr. Edward B. Greene of the University of Michigan, is a multiple-choice vocabulary test consisting of thirty important words selected from each of eight fields: human relations, commerce, government, physical sciences, biological sciences, mathematics, fine arts, and sports. Since this test was standardized with a large sample of students from College M the test medians were assumed to

represent the average achievement of that institution but at College K, the authorities set aside one half day for the administration of the tests. They did not require the students to take the tests but urged them to do so as a matter of interest. The date set for the test was April 24, 1941. The turn-out for the students was very satisfactory—a total of 670 students, or 67.4 per cent of the total enrollment.

RESULTS

The general character of the results may be most easily seen by comparing the average scores and corresponding test percentiles with test medians for each class. The scores for these points are given in Table I and Chart 1.

TABLE I

AVERAGE SCORES, MICHIGAN VOCABULARY TEST

COLLEGE K

APRIL 24, 1941

	No. taking test	% taking test	Human Relations	Commerce	Government	Physical Sciences	Biological Sciences	Mathematics	Fine Arts	Sports	Total	Percent of K students reaching or exceeding median
Freshman												
Boys	125	58.2	14.6	10.6	14.2	11.3	14.0	13.6	10.5	15.8	103	7
Girls	210	76.6	15.6	11.4	14.8	8.0	13.9	13.6	10.9	12.5	100.5	7
Test Median			17	18	19	12	15	19	15	20	137	
Sophomores												
Boys	78	55	16.1	15.6	18.0	14.2	16.1	17.4	11.5	18.9	129	17
Girls	102	93.6	16.2	14.4	16.7	10.1	15.6	14.9	12.6	13.4	115.3	9
Test Median			19	19	20	13	18	20	16	20	146	
Juniors												
Boys	35	39.5	16.1	16.0	16.9	14.6	15.8	16.9	11.5	18.1	125.8	12
Girls	49	79	16.1	14.7	16.2	9.6	14.7	14.9	11.6	12.6	110.3	4
Test Median			20	20	20	14	19	20	17	21	152.5	
Seniors												
Boys	41	62	17.3	14.2	17.8	13.4	15.9	16.7	12.1	18.5	127	7
Girls	30	81	18	13.2	16.0	9.8	16.7	15.9	14.4	11.7	115.8	3
Test Median			21	21	21	15	21	21	18	21	160	

The first striking result is that the K students on the average rank far below the test medians. How much below they rank relatively may be seen from the percentile scores. The median achievement of the K students ranges

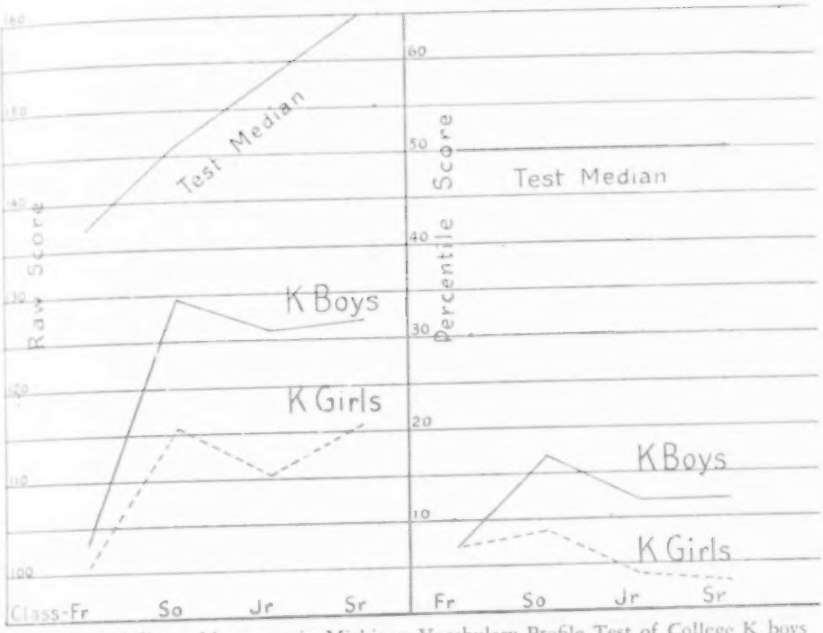

Chart 1—Median achievement in Michigan Vocabulary Profile Test of College K boys and girls by classes. The curves on the left are based on raw scores and those on the right on percentiles.

from the third percentile for the senior girls to the seventeenth percentile for the sophomore boys. On the whole only 8 per cent of the K students equal or exceed the test medians. The second striking result is that the K students reach their maximum score in the sophomore class and then decline while the test medians show a consistently increasing score from freshman year to senior year. This raises the question of the adequacy of the norms. The manual accompanying the test states that the published norms are based on 4677 cases. A letter from the author of the test to the writer states that the populations tested were samples from the University of Michigan, Oberlin College, New York University, Ohio State University, and several smaller colleges. It would appear that the sampling is adequate from the institutions represented, but it is possible that the institutions in which the test was standardized are very superior in the entire group of American colleges and universities. If this is true the comparison between the average

achievement of K students and test norms established in other colleges should be much more favorable.

Such comparison was provided by the results of the Graduate Record Examination, which was administered to the K seniors in May, 1942. This examination, sponsored by the Carnegie Foundation for the Advancement of Teaching, consists of nine comprehensive tests, one in vocabulary called Verbal Factor and one in each of the following subjects: mathematics, physics, chemistry, biology, social studies, literature, and fine arts. Among others the following sets of norms are supplied with this examination:

1. Norms for seniors based on the scores of 3990 senior men at the following colleges and universities: Allegheny, Amherst, Bowdoin, Dartmouth, Hamilton, Lehigh, Middlebury, Union, and Wesleyan.

2. Norms for first-year graduate students, one set based on 830 students from Brown, Columbia, Harvard, Princeton, Rochester and Yale, and one set based on the results from 685 first-year graduate students in the state universities of Iowa, Michigan, Minnesota, and Wisconsin.

3. Norms for seven midwestern colleges based on the results of 641 senior men from Antioch, Cornell, Hiram, Knox, McCalester, Michigan State, and University of Michigan.

The comparison between the K seniors with these norms is shown graphically in Chart 2 in terms of a standard score for the various subjects.

The standard scores in Chart 2 were obtained by converting the raw scores from the various tests into general scores based on normalized distributions of first-year graduate students from eastern universities. Their general mean is 500 and the standard deviation is 100. The seniors from 12 eastern liberal arts colleges are on the whole one-seventh standard deviation below this mean, the seniors from seven midwestern colleges are seven-tenths of a standard deviation below it, and the K seniors are 1.6 standard deviations below it. In term of percentiles, this means that the mean of the seniors in eastern liberal arts colleges lies on the 41st percentile of first-year graduate students in eastern universities, the mean of the seven midwestern colleges lies on their twenty-sixth percentile, and the mean of the K seniors lies just below their fifth percentile. From the foregoing results it appears that the K seniors have about the same relative position in the Michigan Vocabulary Profile Test and in the Graduate Record Examination, and this in spite of the fact that the examinations are very different in character and have been

standardized in different institutions. There is therefore no reason for questioning the adequacy of the norms except that they were obtained from rather restricted regions.

Having stated the differences in achievement, the next step is to describe the tests by which the causes of these differences were investigated.

The Cultural Background Test was given to the K students along with the Michigan Vocabulary Profile Test. For comparison with the results of these tests, there were available the scores on the Henmon-Nelson Test of Mental Ability for College Students, which was administered to the K students when they entered the college as freshmen. In order to make comparisons with the students of College M the Cultural Background and Henmon-Nelson tests were given to a sample population of 163 students in College M by one of the sociology professors in that college.

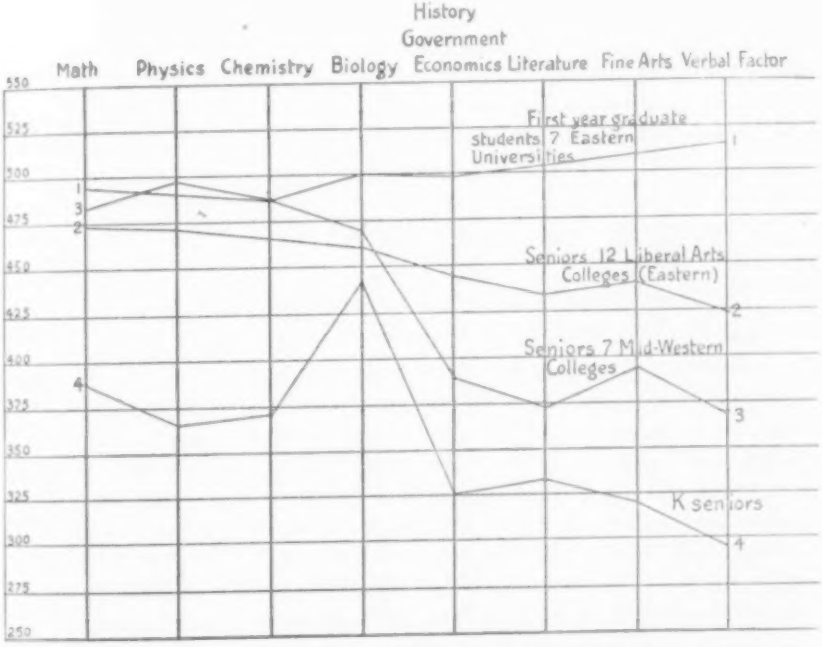

Chart 2—Average achievement by subjects in Graduate Record Examination.

The cultural background questionnaire referred to above asked for the students name, date of birth, high school from which he graduated, classification in college, sex, degree or certificate sought, vocation preparing for, last year of school completed by father, last year of school completed by mother, father's occupation, whether or not a daily paper comes to parent's home, magazines coming to parent's home, semester hours completed in different fields of knowledge, number of books read voluntarily between September 1 and May 1 in fiction and in non-fiction, hours a week spent in work, whether or not a regular study program was followed, and the number of hours per week spent in study.

The amount of scholarly production was measured, as stated before, by the number of contributions to educational or scientific journals or to public exhibits during a two-year period. For written products each book or article in a man's field that was printed in a verifiable and purchasable educational or scientific publication counted one. For artistic products (paintings, drawings, or works of sculpture) each piece having a name and given a public exhibit or published in an art magazine counted one. For College M this information was obtained from the regularly published Bibliography of Publications for the period July 1, 1939 to June 30, 1941. For College K it was obtained from a bibliography furnished by the president's office. The titles published during 1940 and 1941 were counted but unpublished papers and theses were not counted. The total number of products for each institution for the period was divided by the number of faculty members having the grade of instructor or better.

The results of the intelligence and cultural background tests and of the counting of the scholarly products are given in Table II.

From this table we see that the M students excell the K students in intelligence score by an average of 30 per cent, that although both groups of students are in the liberal arts colleges most of the M students seek the A. B. degree while most of the K students seek a B. S. degree which carries a Life Certificate, that a large majority of both groups is preparing for a profession, that the fathers of the M students on the average have 70 per cent more years of formal schooling, that 100 per cent of the parents of M students take a daily paper against 86 per cent of the parents of the K students, that the parents of M students have a 35 per cent higher Magazine score, that during the school year the M students read on the average 142 per cent

more fiction books and 368 per cent more non-fiction books than the K students, that the M students work on the average of 10 per cent fewer hours per week, that about half of each group follows a study program, that both groups study approximately the same number of hours per week, that the average scholarly production per faculty member is 400 per cent greater at College M than at College K, and the proportion of faculty members participating in the production is nearly 200 per cent greater.

TABLE II

COMPARISON OF RESULTS ON INTELLIGENCE, CULTURAL BACKGROUND, AND FACULTY PRODUCTION

	College K	College M
1. Ave. intelligence score	40.7	51.9
2. Educational goal		
Per cent seeking A. B. degree	23	73
Per cent seeking B. S. degree	51	17
Per cent seeking other degree	26	10
3. Vocational goal		
Per cent professional	73	82
Per cent farming	7	0
Per cent housekeeping	7	3
Per cent commerce	13	15
4. Parents Education		
Median grade completed, father	8	13.6
Median grade completed, mother	11	12.75
5. Ave. Magazine score	20.6	27.6
6. Ave. No. of books read voluntarily between Sept. 1 and May 1		
Fiction	3.3	7.0
Non-fiction	1.9	4.1
7. Ave. No. of hours work per week	10.4	9.45
8. Per cent following study program	49.0	48.0
9. Per cent parents taking daily paper	86.0	100.0
10. Ave. hours study per week	22.0	22.1
11. Scholarly production		
Ave. number per faculty member for two years	0.6	2.85
Per cent of faculty members contributing	34.0	62.0

The student results in Table III may be subject to sampling errors. For the K students they are necessarily very small, for with the exception of the intelligence scores they are taken from two-thirds of the student body. The intelligence score is based on two hundred cases, but the average of 40.7 is

not far above the median for freshmen in 1941, which was 38. The difference may be accounted for by the fact that only 20% were freshmen. The sampling error of the M students was reduced somewhat by the fact that the students were not volunteers but were given the tests as a part of courses in sociology. The students used were 42 sophomores, 50 juniors and 71 seniors. In the opinion of their instructors these students were representative of the student body.

TABLE III

AVERAGE SCORES IN MICHIGAN VOCABULARY PROFILE TEST DISTRIBUTED BY OCCUPATIONS

COLLEGE K

Occupation	Average	Number
Professional	112	84
Farming	110	100
Commercial	112	87
Skilled Labor	114	50
Unskilled Labor	109	6

Although there are large differences in cultural background between the M and K students, the existence of a difference is no proof that it is significant for achievement in college subjects unless we can show a significant correlation between the amount of the difference in question and the amount of the score in scholarship. In case of the K students a study was made of the significance of each of the principal factors in the Cultural Background Test. The influence of the occupations of parents was investigated by classifying the vocabulary scores of pupils according to the occupations of their parents and then calculating and comparing the average scores. Each of the other factors named was investigated by correlating the total vocabulary score with a numerical value for each of the factors named in the test. The relation of the vocabulary score to the father's occupation may be seen from the results in Table III. It shows that the average score is practically the same for each of the occupations given. The absence of relationship is undoubtedly due to the fact that college work selects students of a certain mental level regardless of the parental occupation.

As a preliminary to studying the relationship between school grades and vocabulary test scores, average grade points at the end of the spring semester

in 1941 were computed for K students. In the grading system used grade A equals five, B equals four, C equals three, D equals two, and F equals one. The number of credit hours in the subject is multiplied by the proper factor and then the total of points is divided by the total number of credit hours accumulated.

It was thought that the magazines taken in the home might give a measure of the culture of the home. To get a rating on the magazines, a questionnaire was sent to a number of the faculty members asking them to rank a check list of magazines in the order of merit for cultural value. From these ratings the average rank of each magazine was calculated and a scale value computed for each magazine. If a student reported a magazine which was not rated in the scale it was given the rating of a magazine judged to be equally good. For example, Fortune was given the same rating as Atlantic and National Geographic the same rating as Life. The scale values for the magazines named in the check list were as follows:

MAGAZINE RATING SCALE

Harpers	8.0	Life	4.8
Atlantic	7.6	Popular Mechanics	4.7
Time	6.7	Woman's Home Companion	4.7
Readers Digest	6.5	Ladies Home Journal	4.7
Newsweek	6.1	Any Religious Magazine	4.3
Saturday Evening Post	5.1	Any farm or trade Magazine	4.0
Colliers	4.9	Look	3.0
Popular Science	4.9	Wild West	2.3
Good Housekeeping	4.8	True Story	2.0

The magazine index was derived by adding the scale values of each magazine taken. Such a sum takes account not only of the quality but also the quantity of the magazines taken.

In Table IV we find the correlations between total vocabulary score and each of seven other factors. The 200 cases used as a basis of the correlations were derived from an alphabetical list of students as follows: first forty freshmen boys, first forty freshmen girls, and the first twenty boys and girls from each of the other classes.

In this we see that the total score has a significant relationship with intelligence and grade point average but almost no relationship to each of the other factors excepting possibly the magazine index, which shows a correlation of .137.

TABLE IV

CORRELATION BETWEEN MICHIGAN VOCABULARY PROFILE TEST AND OTHER FACTORS

Intelligence	.496	±.036	Magazine index	.137	±.046
Grade point average	.525	±.036	Father's education	.082	±.047
Hours work per week	.036	±.047	Mother's education	.004	±.048
Hours study per week	.066	±.047			

The correlation between intelligence and vocabulary score probably means that intelligence is an important, but by no means the only factor in college achievement. The correlation between grade points and vocabulary score can only mean that these two scores measure to some extent the same thing, namely, college achievement. The absence of significance in the relationship with factors other than intelligence and grade point is rather surprising. It is reasonable to suppose that hours of study would be a significant factor if other factors could be kept constant. Whatever influence hours of study has is probably counterbalanced by other factors such as intelligence and effectiveness of study methods. Similarly it would appear that amount of involuntary reading would be a factor in college achievement, but without an exact record of the amount and kind of reading and its relation to the criterion of college achievement, its influence is difficult to measure. The amount of publication on scholarly production would also seem to be a factor in the achievement of students. A teacher who keeps abreast of and participates in the solution of the new problems in his field ought to be a better teacher than who treats his subject as a closed field. Against this we hear it said that the research worker is usually a poor teacher. But how shall we measure the influence of scholarly production upon the achievement of college students?

After this study of the results of college achievement tests, the question comes up as to what can be done to increase the achievement of the K students. Because of lack of space we shall here merely summarize the principle recommendations made to the president of college K. It was recommended that the administration should emphasize increase in quality of work rather than increase in enrollment, use more care in the selection of students, require a minimum level of achievement as a condition of staying in college, and urge faculty members to follow the normal distribution in grades. The faculty, upon which most of the responsibility for better scholarship falls, should make heavier assignments, devise more varied teach-

ing methods, grade more strictly, put more emphasis on subjects showing excessively low achievement, devise means for publicising and spreading culture among all the people, and give some comprehensive test of college achievement once a year.

SUMMARY

This study was undertaken to explore some of the factors that cause one college to reach a much higher average achievement than another. For practical reasons the study was limited to a comparison of sample populations of two colleges, K and M. It was found that in the Michigan Vocabulary Profile Test, which was standardized in part at M the K students ranked on the average below the ten percentile score. An opportunity to check this ranking was provided from the results of the Graduate Record Examination, which was administered to all the K seniors in May, 1942. It was found that the average position of the K seniors was also below the tenth percentile of the average total scores in eight college subjects made by twelve eastern liberal arts colleges.

Three factors—intelligence of students, cultural background of students and scholarly production of faculty members were investigated as possible causes of the difference in achievement. It was found that on the average the M students have a 30 per cent higher intelligence score, that their parents have spent a much longer period in formal education and take more and better magazines, that the M students read 142 per cent more fiction books and 368 per cent more non-fiction books, but they spend no more time in study than the K students.

By statistical techniques it was shown that father's occupation, hours work per week, hours study per week, and amount of parental education had no significant relationship with college achievement as measured by the tests used, but intelligence score and grade point average had significant correlations with it. The magazine index also appeared to be somewhat significant. The influence of voluntary reading and of faculty production was not measured. Our statistical results reveal only one significant factor that accounts for the difference in average achievement between two colleges, namely, intelligence, but presumably there are many other factors which we either have not measured and even not named. It may be that the significant factors are differences in quality of teaching, college regulations, college traditions, zeal for scholarship, teaching load, salary level, and leadership.

To the writer the study of the causes of differences in achievement by different colleges appears to be a promising field of research. It is hoped that other studies will be able to avoid some of the limitations of this study such as possible inadequate sampling of the population of the colleges studied, using one sample for the measure of achievement and a different sample for the measure of the factors that influence achievement, and using the norms made in one region and kind of institution for the norm of a different region and institution.

Some recommendations were made for the improvement of the achievement of K students.

The writer wishes to acknowledge his obligations to the staff members from college K and M who assisted him.

LATIN-AMERICAN CONTENT IN SOME BASIC TESTS IN USE IN THE UNITED STATES

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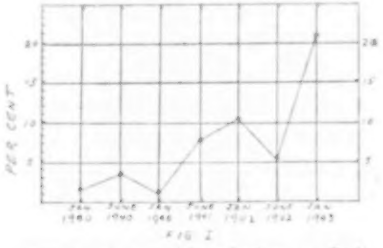
Editor's Note: There is currently wide spread interest in Latin America. The author reports the results of a study of some basic tests used in the United States.

The years 1943–44 witnessed the launching and completion of what may very well prove to be the most significant survey of basic teaching materials that has ever been attempted in the United States. The American Council on Education, with financial backing and encouragement from the Office of The Coordinator of Inter-American Affairs, carried to completion a study of the treatment of Latin American content in the teaching materials in all the basic subject matter fields on the elementary, secondary and college levels in the schools of this nation. It is too early to predict the far-reaching effects upon possible textbook revision and ultimate betterment of international relations—which may eventually be traced to this project.

One by-product of this survey was the revelation of the significance of Latin America as a subject for consideration in certain tests, which, by their sheer weight as determinants for promotion and their unquestioned acceptance in certain quarters as criteria for college entrance, can claim a unique spot in the field of American education.

The first objective of the effort in this field of the Survey was the ascertaining of just what material dealing with Latin America was to be found in some of the standardized tests in general use in the schools of the United States. Presumably, tests purport to find what is being taught in a particular course or group of related courses, and the direction of their emphases should be some indication of what the testing agency believes to have been a trend of instruction in such courses. If this premise is accepted, it follows that if tests in American History for example, contain no references to Latin America, this might be taken as an indication, either that knowledge of Latin America was considered to be unimportant or that the testing agency did not believe that instruction in American History had included materials dealing with our neighbor-nations to the south.

The second objective was to see if trends, in testing and therefore in instruction, might be pointed out. Such an evaluation might evolve from an attempt to find the answers to such questions as these. Are there more questions dealing with Latin America in tests published in 1942 than there were in those published in 1938? Do the subject matter fields in which material on Latin America is found, tend to increase or decrease in number? Does the type of question reveal a change in teaching emphasis or are questions and areas of inquiry static? Do the questions dealing with a particular country, topic, incident or person change from year to year in such a way as to indicate a change of attitude toward such countries, topics, incidents or persons? Might questions themselves, by the mere fact of their



Percent of material referring to Latin America in Board of Regents American History Examinations of years 1940 to 1943 inclusive.

having been read, become media of instruction and therefore of conditioning? Topically, what are the constants in the whole field of instruction concerned with Latin America? That is, with what particular topics do tests deal, year after year? What questions recur fairly regularly and in what areas are questions habitually found?

It seems reasonable to expect that answers to such questions should point to trends in testing practice as well as to patterns for the use of materials for teaching, and serve as, "straws in the wind".

PROCEDURE

The survey envolved the careful examination of one hundred and fifty-five tests. These tests represented the following publishing and distributing agencies: College Entrance Examination Board; University of the State of

New York (Regent's); World Book Company; Cooperative Test Service; State University of Iowa Testing Bureau.

The following subject matter fields were represented in the battery of tests surveyed: ancient history, mediaeval history, American History, United States History, Modern Problems, civics, English, music, art, geography, economics, social studies, contemporary affairs, and general culture.

Questions dealing with Latin American content were singled out, tabulated, and catalogued under twenty-one headings or categories. The basis for inclusion of an item in a list under any one heading, was, the apparent

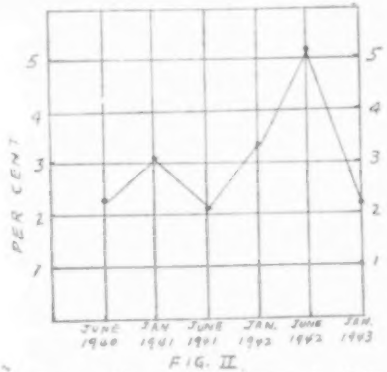


FIG. II.

Percent of material referring to Latin America in Board of Regents Elementary United States History Examination, 1940 to 1943 inclusive.

importance of the item from the standpoint of its number of recurrences. The number of questions of such nature which occurred in each test was compared on a percentage basis with the total number of questions in the test.

While tests which had been published in the last five years were used in the survey (each revision being examined), and wherever possible a consecutive series of tests was evaluated, in some instances tests published as far back as 1929 were included.

In the figures making up the "total questions on test", and "total questions dealing with Latin America", summaries for those tests in which no Latin American reference was found are not included.

Four graphs were drawn, using as a basis, data drawn from a series of tests, to ascertain if quantitative trends existed. After all data were assembled and tabulated, a question by question analysis was made, the results of which appear as part of the conclusions.

A list of tests used, a list of those containing no references to Latin America, four graphs, a table of tests showing publisher, title, year, series, questions and percents, and a table showing categorical disposition of the questions appear in the Appendix.

FINDINGS

Of the 155 tests examined, only those having questions dealing with Latin America were included in question totals. That narrowed the field to 58 tests. These 58 tests contained 6,796 questions, 242 of which had some reference to Latin American material.

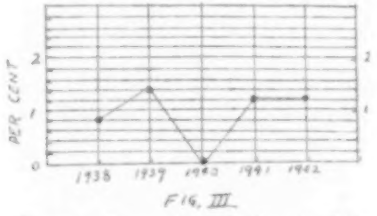


FIG. III

Percent of material referring to Latin America in American Council on Education Cooperative Tests of General Achievement in Social Studies, 1938 to 1942 inclusive.

No series of tests, with the possible exception of the Board of Regents Examination in American History showed any numerical increase in the number of questions on Latin America. The test in that series for January 1943 devoted 21 per cent of its questions to the above mentioned field, in contrast to 10 per cent in January 1942 and 5.4 per cent in June, 1942. The inport of this finding is offset by the Regents Examination in elementary United States History which showed a decline from 5.2 per cent in June 1942 to 2.3 per cent in January 1943.

A complete classification of questions appears in the Appendix but the top five categories were: geography, (38 questions), Monroe Doctrine, (30 questions), Pan-American Conferences, (21 questions), United States

economic interests in, and trade with, Latin America, (20 questions), Pan-American solidarity, (13 questions).

No questions touching on Latin America were found in tests concerned with English, art or music, yet tests on Contemporary Affairs expected pupils to have gained some information about Latin America through study in the subject-matter fields of art, music and English.

A great majority of the questions were factual in nature but some few could be answered only from the standpoint of attitude based upon facts. As an example of the former, this item is rather typical: "Brazil exports large quantities of ----------." The second type might be

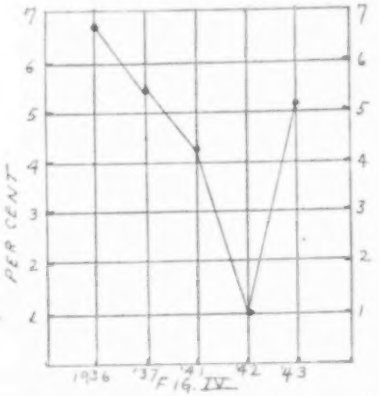


FIG. IV

Percent of material referring to Latin America in American Council on Education Cooperative Tests in American History, 1936 to 1943 inclusive.

illustrated by this sample: "An eight year old boy says that he hates the Mexicans, although he has never had any unpleasant experiences with them. The most probable reason for his feeling is that

(1) He has heard other people talk about disliking Mexicans.
(2) It is natural for people to dislike persons of other nations.
(3) He has inherited a dislike for the Mexicans from his parents.
(4) All Mexicans are naturally untrustworthy.
(5) He has been influenced by what he has read in the newspapers."

TABLE I

SHOWING TESTS EXAMINED AND PERCENT OF LATIN AMERICAN QUESTIONS IN EACH

Test Publishers or Agency	Field of Test	Year	Series or Form	Total questions on Test	Total questions dealing with L. A.	Per cent of Questions
College Entrance Examination Board	American History	1938	D	6	1	16.3
Coll. Ent. Ex. Bd.	" "	1939	D	13	1	7.—
" " " "	" "	1940	D	14	1	7.—
" " " "	" "	1941	D	15	1	6.6
" " " "	" "	1941	D–E	5	1	20.
Iowa Every Pupil Test	Understanding of Current Affairs	1940		92	2	2.—
Iowa Ev. Pup. T.	United States History	1940		90	5	4.—
" " " "	U. S. History	1942		90	6	6.—
" " " "	American Govt.	1942		87	1	1.1
Iowa High School Content Examination	H. S. Seniors and College Freshmen	1943		100	1	1.
Columbia Research Bureau	American History	1926	A	158	8	5.
Col. Re. Bureau	" "	1926	B	158	8	5.
Regents Examination	American History	1/40		59	1	1.7
" "	" "	6/40		59	2	3.4
" "	" "	1/41		65	1	1.5
" "	" "	6/41		76	6	7.8
" "	" "	1/42		75	8	10.5
" "	"	6/42		74	4	5.4
" "	"	1/43		46	10	21.
" "	"	1/40		80	2	2.5
" "	"	6/40		80	8	10.
" "	"	1/41		74	9	12.
" "	"	6/41		76	2	2.6
" "	"	1/42		62	4	6.2
" "	"	6/42		83	5	6.
" "	"	1/43		87	3	3.5
" "	Elementary U. S. History	1/40		68	7	10.3
" "	El. U. S. History and Civics	6/40		85	2	2.3
" "	El. U. S. History with Civics	1/41		95	3	3.1
" "	El. U. S. History with Civics	6/41		93	2	2.1
" "	El. U. S. History with Civics	1/42		89	3	3.4
" "	El. USH + Civ.	6/42		96	5	5.2
" "	El. U. S. History	1/43		87	2	2.3
Cooperative Test Series	General Achievement Social Studies	1938		120	1	.8
" " "	Gen. Ach. Soc. Stud.	1939	P	120	2	1.6
" " "	" " " "	1940	QR	120	0	0.
" " "	" " " "	1941	S	90	1	1.1
" " "	" " " "	1942	T	92	1	1.1
World Book Company	Metropolitan Achievement Tests					
" " "	Geography	1932	A	104	10	9.6
" " "	M. A. T. History	1932	A	107	1	1.1
" " "	New Stanford Test Geography	1929	W	80	3	3.7
" " "	N. S. T. Geography	1929	V	80	5	6.2
" " "	Stanford Achievment Test Social Studies History	1941	Dm	70	2	2.8
" " "	S. A. T. S. S. Geography	1941	Dm	70	4	5.7

TABLE I—Continued

SHOWING TESTS EXAMINED AND PERCENT OF LATIN AMERICAN QUESTIONS IN EACH

Test Publishers or Agency	Field of Test	Year	Series or Form	Total questions on Test	Total questions dealing with L. A.	Per cent of Questions
Coop. Test Series	General Culture	1941	R	450	3	.6
" " "	" "	1942	S	450	3	.6
" " "	" "	1943	T	450	2	.5
" " "	Social Studies Abilities	1939	Q	226	14	6.2
" " "	" " "	1941	R	145	4	2.7
" " "	" " "	1942	S	140	5	3.5
" " "	American History	1936	1937	175	12	6.8
" " "	" "	1937	1937	185	11	5.4
" " "	" "	1941	R	98	4	4.2
" " "	" "	1942	S	99	1	1.
" " "	" "	1943	T	98	5	5.1
" " "	Contemporary Affairs Test for High School	1942	1942	120	1	.8
" " "	C. A. T. for H. S.	1943	1943	120	4	3.3
" " "	C. A. T. for College Students	1942	1942	300	10	3.3
" " "	C. A. T. for C. S.	1943	1943	300	9	3.

Comparatively few questions dealt with the outstanding people of Latin America. Authors, artists, musicians, even political leaders were almost ignored. What is perhaps even more significant, the people, how they live, how they make a living, their customs, came in for a relatively insignificant share of the inquiry.

CONCLUSIONS

The study revealed that comparatively little attention is being given to Latin American content by some of the outstanding test publishing agencies. Such a finding is significant in that it reveals, either that the testing bureaus are lagging behind the curricular revisions toward greater emphasis on Latin America if such exist, or that there is a noticeable paucity of such material in curricular offerings. If this last is true, then we can expect our in-school population to be relatively ignorant of Latin America, a condition not in the least conducive to a sympathetic attitude toward those neighboring nations.

Tests surveyed in the fields of art, economics, music and English, contained no references to Latin America. That Latin America has made a

definite contribution to our fund of American music and that the art of Rivera at least, is more or less familiar to people of the United States, are indisputable facts. The familiarity of radio audiences with conga, tango and rhumba rhythms and street and folk airs is offered as substantiation in the first case. It is, however, more surprising yet, to find no questions in tests in economics which gave the least hint of the importance of Inter-American economic symbiosis. In contrast, such questions occurred in twenty instances in tests in American History.

It would seem, in the light of publicity given to Pan-Americanism by every means available, that the ever-increasing importance of Latin America would be paralleled by a comparable increase in the number of questions devoted to that subject. This was not the case in most of the tests analyzed. Only one showed a marked increase in the number of questions so directed in 1943, over the number found in former tests and at least one series revealed a marked decline in number.

Of 242 questions which dealt with Latin America, 38 were concerned with geographical factors. Many of them asked about distances between given points—others inquired about farm products, climate and soil. Still others inquired about languages spoken, leading exports, chief international highways and traffic on large rivers. Geography questions had probably the greatest spread of interest of any of the subject-matter fields. The significance of the human element was recognized and the economic side of the nations envolved was presumed to hold a place of importance in curricula in the United States. Among questions of historical or political significance, the Monroe Doctrine drew the lion's share of attention. Some tests asked for examples of its application; others delved into results of it while a third group asked for interpretations. By and large, pupils were asked to deal with it as objectively as they could. Opinions were asked for and reasons for such opinions insisted upon. Here is an example of one of the better "thought questions":

"Give your opinion of the following statement, supporting your argument with relevant facts:

The Monroe Doctrine is a one-sided statement of our own interests and has always been applied as such."

Pan-American Conferences, Pan-American solidarity and Good Neighbor Policy, garnered 21, 13 and 8 questions, respectively, amassing a total of 42 questions. That in contrast to this, the old stand-by topic, the "Panama Canal", could collect but 12 questions is one of the hopeful signs of either testing or teaching or happily perchance, of both.

A spirit of fairness of treatment may be found in the fact that questions concerning our own imperialistic policies and territorial acquisitions were twice as numerous as those about the "Good Neighbor" policy. No attempt at mental whitewashing was made. Our acquiring of property after the Mexican War and the Mexican confiscation of American controlled oil property were both considered with a non-partisan air of detachment.

APPENDIX

MAIN CATEGORIES FOR TEST ITEMS

Topic	No. of Questions
Geography	38
Monroe Doctrine	30
Pan American Conference	21
United States Economic Interest and Trade in Latin America	20
Pan American Solidarity	13
Panama Canal	12
Natural Resources	12
Mexican War	11
Latin American Characters	10
Good Neighbor Policy	8
Imperialistic Policy	8
Territorial Acquisition by United States	8
Treaties	7
Latin America and World War II	7
Literature	6
Attitudes	5
Terms	4
Drama	3
War for Texan Independence	3
Language	2
Confiscation of Property by Mexico	2
Miscellaneous	12
Total	242

LIST OF TESTS SURVEYED WHICH CONTAINED NO MATERIAL ON LATIN AMERICA

(University of the State of New York (Regents) Examinations)

History A (Ancient History)—Tests of January, 1939; June, 1939; January, 1940; June, 1940; January, 1941; June, 1941; January, 1942; June, 1942, January, 1943.

History B (World History)—Tests of January, 1939; June, 1939; January, 1940; June, 1940; January, 1941; June, 1941; January, 1942; June, 1942; January, 1943.

Elementary English—Tests of January, 1939; June, 1939; January, 1940; June, 1940; January, 1941; June, 1941; January, 1942; June, 1942, January, 1943.

Economics—Tests of January, 1939; June, 1939; January, 1940; June, 1940; January, 1941; June, 1941; January, 1942; June, 1942; January, 1943.

Comprehensive Art—Tests of January, 1939; June, 1939; January, 1940; June, 1940; January, 1941; June, 1941; January, 1942; June, 1942; January, 1943.

English 4-years—Tests of January, 1939; June, 1939; January, 1940; June, 1940; January, 1941; June, 1941; January, 1942; June, 1942; January, 1943.

Comprehensive Music—Tests of January, 1939; June, 1939; January, 1940; June, 1940; January, 1941; June, 1941; January, 1942; June, 1942; January, 1943.

Cooperative Test Service—Cooperative Economics Test Form P—1939; Cooperative Economics Test Form S—1942.

SOME CONCEPTIONS AND BELIEFS CONCERNING ABILITIES, MENTAL PROCESSES AND LEARNING AND CHANGES IN THE NUMBERS ENTERTAINING THEM DURING A YEAR OF COURSES IN EDUCATION*

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The Citadel
Charleston, S. C.

Editor's Notes: Doubt has arisen in the minds of some persons about the effectiveness of school education. The author reports data on changes that took place in the psychological concept of college students preparing to teach.

THE investigation, of which this study forms a part, was based upon the assumption that more attention should be paid to the development of specific professionally significant concepts and beliefs during the education of prospective teachers. Such a program, to be most effective, would involve preliminary and subsequenting testing with reference to the more specific elements of learning, such as that represented by this study.

THE INSTITUTION

The institutional source of the data upon which this study is based was an average-sized state college for men located in the Southeast. With reference to quality of the institution, it may be said that about one-third of the present faculty possess the Ph.D. degree and that its physical plant is among the best for its purpose. No data were available concerning the performance of its students on tests possessing national or regional norms, except that gathered by testing freshmen at the time of their entrance. The freshmen, however, were representative in scholastic aptitude of those entering colleges and universities in the region, according to the results obtained on the American Council Psychological Examinations—at least at the time we are concerned with. It can also be safely stated that normally about 45% of the freshmen, on the average, survived the influence of the various factors contributing toward elimination to be graduated.

* The following students cooperated in this study: T. P. Collins, F. C. Huffman, S. L. Irvin, C. S. Lowe, P. A. McDaniel, R. Morman, H. Rudnick.

THE SUBJECTS

The subjects whose cooperation provided the data of this report numbered 129 and were mostly junior and senior members of five successive years of college classes. They were, according to the best data available, not far from representative in their general college achievement of the college classes of which they were members and of the larger number of students who, over a more extended period for which data are available, enrolled for one or more courses in education. To be more specific: When the numerical ranks in college achievement of the 129 subjects in their separate college classes, taken as far along as possible,[2] were converted into percentile ranks within these same classes and the percentile ranks thrown into a single distribution, the median percentile rank was 52 and the middle 50 per cent of the percentile ranks ranged from 25 to 71; when a similar distribution was made of the ranks of the 212 subjects who, over a seven year period, enrolled for education, the median percentile rank was 51 and the middle 50 per cent of the percentile ranks ranged from 27 to 75. The 129 subjects of this study were not, it would seem, quite as good as representative of those who took more work in education and who, presumably, thus gave evidence of a more serious intention to enter teaching. To be more specific: when a distribution, similar to those above, was made for 97 such subjects, who, over the seven year period for which data were available, took three or more semester courses (nine or more credits) in education, the median percentile rank was 59 and the middle 50 per cent of the percentile ranks ranged from 30 to 83.

COURSES TAKEN

The curricula followed by these subjects somewhat atypical in that mathematics, chemistry and physics were required of all, and in the large amount of work actually taken by most subjects in their major fields. Less than one-third of the subjects (the pre-medics) had taken college biology and about the same number, college sociology. The following majors were represented by the subjects: chemistry nine, English nineteen, history twenty-eight, modern language one, mathematics three, physics twelve, political science twenty-one, pre-medical thirty-six. General psychology had been

[2] At graduation in most cases.

taken by about one-third of the subjects and was being taken, or would be taken, by another third of the group.

Most of the subjects received their introduction to the field of education in a semester course which surveyed current American education; some in a semester course in the history of education. Nearly all of the subjects took, as the second course in the sequence, a semester of educational psychology. Some took an additional course in education during one or both semesters of the year.

THE TEST AND ITS ADMINISTRATION

The complete investigation involved the construction and use of a test of 160 items, of which number 56 are considered pertinent to this study and incorporated in it. Sources of information useful in the formulation of test items included (a) educational texts, (b) informally gained knowledge concerning the conceptions and beliefs of students obtained in the teaching of them, (c) the results of a preliminary investigation,[3] and (d) the final or preliminary results of somewhat similar investigations made collaboratively.[4] No claim is made that the items were obtained in a manner which was highly objective or lacking in arbitrariness.

The 129 subjects were given the test at the very beginning and again at the end of their first year of courses in education. On both such occasions an attempt, believed reasonably successful, was made to secure thoughtful consideration of the test items and intellectually honest reactions to them. To achieve this end, the subjects were (a) told briefly of the value of such investigations, (b) assured that the project did not involve any rating or marking of them, (c) assured of, and given, all of the time they themselves found necessary to carefully complete the project, and (c) urged to respond in accordance with their real beliefs. Furthermore, the subjects were given a third choice in responding, in addition to the usual ones of believe and disbelieve—that of indicating uncertainty—in the hope of increasing their confidence in the reasonableness of the project and the integrity of

[3] Lynn L. Ralya, "Some Opinions of Educational Significance Held by Prospective Teachers," *South Carolina Education*, XX, No. 7, (April, 1939).

[4] Lynn L. Ralya and Lillian L. Ralya, "Some Misconceptions in Science Held by Prespective Elementary Teachers," *Science Education*, XXII, No. 5, (October, 1938); "Some Concepts and Beliefs Significant to the Social Sciences of Entering Freshmen and the Relation of These to Scholastic Aptitude," *Social Forces*, XX, No. 3, (March, 1942).

their reactions. In addition, the precaution was even taken of labelling the test an Education Inventory in the hope of minimizing any fear reactions which the label "test" might have brought about.

TREATMENT OF DATA

The items or statements of the test were formulated to represent concepts or beliefs considered desirable or undesirable, in accordance with the writer's understanding of current pertinent knowledge and judgments concerning the concensus of authoritative opinion, and in conformity with his assumptions concerning the interpretations which the subjects would be likely to put upon the statements. Subsequent reconsideration of the items caused the elimination of a few because of the ambiguities and inconsistences discovered. The 56 items of this study are accompanied, in Table I by a key which indicates whether belief or disbelief is desirable in accordance with the criteria previously referred to. In the Table are to be found also the number of subjects successful on each item at the beginning and at the end of the period. Those indicating uncertainty were not included among those considered successful.

INTERPRETATION OF RESULTS

Interpretation of the more important results represented in the table must be attempted by writer, reader, or both if the study is to have maximum value, although it is easily possible to go astray in making such interpretations. Any verbal construction, including any items or statements of the test, can have common meaning to different individuals only to about the extent that their pertinent experiences have been alike. Nor is it always possible to be even reasonably sure of the relative importance of different concepts and beliefs in the welfare of the individual or of society. In addition, the percentage of subjects successful on the different items do not include those who indicated uncertainties—and the indication of uncertainty on the different statements is generally more to be desired than outright failure on them.

Items 1, 2, 3, and 4 are concerned with the problem of individual differences. It is worthy of note that the existence of individual differences in intelligence is recognized by not less than 90 per cent of the subjects at the beginning and at the end of the year of courses in education (1, 2).

TABLE I

No.	Statement	Key	Per Cent of Subjects Successful	
			Before	After
1.	People of normal intelligence vary among themselves in intelligence	B	94	95
2.	All people (white) are born with equal mental ability	D	93	90
3.	It has been definitely proven that boys and girls differ in inborn intelligence, on the average	D	42	47
4.	A genius has a special kind of intelligence not possessed by others	D	29	38
5.	It is possible to rank individuals with a great degree of accuracy on the basis of their individual worth	D	38	38
6.	The height of the forehead is a good index of intelligence	D	76	88
7.	Children with exceptionally bright eyes are generally very intelligent	D	78	92
8.	Ability to memorize is a very good index of intelligence	D	59	68
9.	Feeble-minded children can be easily identified by certain physical characteristics in most cases	D	32	42
10.	It is easy to separate people of sub-normal intelligence from those of normal intelligence by means of simple tests	D	18	17
11.	Silent men are usually deep thinkers	D	66	85
12.	Childhood is the time when we are able to memorize best	D	43	45
13.	People with long fingers are likely to be artistic	D	61	76
14.	Much mental fatigue is really physical—that is muscular fatigue	B	74	88
15.	All feeling involves activity of the nervous system	B	77	88
16.	Thinking is dependent on sensory experience	B	37	50
17.	In some mental processes the mind functions without any corresponding activity of the nervous system	D	43	44
18.	Imagination is a spontaneous process which makes use of elements not found in former experiences of the individual	D	46	58
19.	No imagination is involved in careful thinking	D	66	84
20.	In all probability the best novelists of our times have greater imaginative ability than the best scientists	D	46	57
21.	The thinking of educated people is influenced very much by wishes and desires	B	67	78
22.	Most adult thinking is done independently of words	D	34	38
23.	Thinking involves inhibition	B	33	63
24.	With proper mental concentration it is possible to tell what another person is thinking	D	65	77
25.	Women are, in general, possessed of a power of intuition which men do not possess	D	52	67

TABLE I—Continued

No.	Statement	Per Cent of Subjects Successful		
		Key	Before	After
26.	The average child begins to reason when he is about twelve	D	41	31
27.	Emotions cannot be clearly differentiated from feelings	B	65	65
28.	The emotions a person is experiencing can generally be rather easily identified by noting the facial expression	D	29	43
29.	Interest is a powerful factor in learning	B	97	96
30.	Knowledge of reward is generally an aid to learning	B	93	98
31.	Knowledge of progress is an effective aid in learning	B	92	95
32.	Punishment is always unsuccessful as a device to bring about learning	D	76	78
33.	All important educational objectives can be achieved by utilizing the natural, inborn, interests of children	D	41	45
34.	Most of the differences in the interests of boys and girls are due to inheritance	B	57	56
35.	A person learns only in terms of past experience	B	14	33
36.	Experience obtained from living rather than from books is always the best teacher	D	29	44
37.	On the average fast readers retain more of what they read than slow readers	D	18	46
38.	All learning involves inhibition	B	20	48
39.	Repetition insures learning	D	44	65
40.	Effective learning depends in great measure upon the establishment of appropriate habits	B	88	93
41.	Breaking a habit may be said to be learning	B	71	91
42.	The slow learner retains what he learns better than the fast learner	D	63	79
43.	All animal learning is on the level of physical trial and error	D	27	22
44.	Studying Latin improves greatly ones ability to reason in mathematics	D	83	80
45.	The study of mathematics makes one more logical in his general thinking	D	23	32
46.	Chess-playing develops one's general powers of concentration	D	16	25
47.	Learning one set of facts always aids in learning of a second set of facts	D	35	46
48.	For purposes of mental development one subject is as good as another	D	72	68
49.	All mental ailments are traceable to physical causes	D	67	80
50.	People can be divided into two distinct classes: the mentally normal and the mentally abnormal	D	52	55
51.	All people can be classified into two groups: extroverts and introverts	D	38	50

TABLE I—Continued

No.	Statement	Per Cent of Subjects Successful		
		Key	Before	After
52.	Children inherit a tendency to fear many kinds of living things	D	56	66
53.	All repressions are harmful to the individual	D	71	85
54.	A "complex" is always harmful	D	59	76
55.	Only the insane have delusions	D	88	93
56.	A person with an inferiority-complex may appear to be very egotistical	B	68	82

However, there was a very high degree of failure to reject the statement that the genius has a special kind of intelligence (4)—a statement representing a type of belief running counter to both fact and democratic ideology. Nor should it be overlooked that there was the same degree of failure to reject a statement of a belief which might be most useful to those who would control others in an arbitrary and undemocratic way—the belief that it is possible to rank individuals with a great degree of accuracy on the basis of their individual and social worth (5).

Fallacious beliefs in the validity of certain commonly accepted indices of intelligence are represented by items 6 through 11. It is worthy of note that, at the end of the period, about 90 per cent of the subjects rejected the "height of the forehead" (6) and the "brightness of eye" (7) fallacies, and that about 70 per cent rejected "ability to memorize" (8) as a very good index. Considerable improvement was made in the preceding items during the period. However, even at the end of the period, less than 50% of the subjects rejected a statement of the "physical index" fallacy with reference to feeble-mindedness (9) and less than one-fifth of the subjects rejected a statement of the fallacy that it is easy to identify those of subnormal intelligence by means of simple tests (10). There was improvement on the former item but not on the latter one during the period.

The results on items 14 through 18 are thought to be revealing of the subjects' conceptions and beliefs concerning the relationship existing between what we are accustomed to call the mental and the physical. According to the results on items 14 and 15, about 90 per cent of the subjects would seem to have reached, by the end of the period, the conclusion that

there is some kind of connection between mental life and the physical, since about that number accepted the statement that much mental fatigue is really physical (14) and the same number accepted the statement that all feeling involves activity of the nervous system (15). However, it appears that nowhere near as large a number of the subjects had arrived at the belief that the connection between the mental and the physical is as invariable as it is, since 50 per cent failed to accept the statement that thinking is dependent on sensory experience (16), and a somewhat greater number failed to reject the statement that in some mental processes the mind functions without any corresponding activity of the nervous system (17), while only 58 per cent successfully rejected the statement that imagination is a spontaneous process which makes use of elements not found in former experiences of the individual (18).

Additional items of considerable significance in revealing these subjects' conceptions and beliefs concerning thinking are items 21, 22, 23. There was apparently, even at the beginning of the period, a fair degree of recognition of the influence of wishes and desires on thinking (21). However, at that time, only about one third of the subjects rejected the statement that most adult thinking is done independently of words (22), while only about the same number accepted the statement that all thinking involves inhibition (23). The number successful on this last item was about twice as great at the end as at the beginning of the period—but not as great as is considered desirable because of the need for counteracting the influence of some of the verbal outpourings of the unsound advocates of so-called "creative thinking".

Items 29 through 43 are concerned with the problem of learning. Nearly all of the subjects gave recognition to the importance of interest (29), reward (30), and knowledge of progress (31) in learning; a fairly large number accepted punishment as a device which is not always unsuccessful in bringing about learning (32). However, over one half of the subjects failed to reject statement of the untenable thesis that all important educational objectives can be achieved by utilizing the natural, inborn interests of the child (33). Nor should it be overlooked, with reference to this failure, that nearly half of the subjects failed to reject the statement that most of the differences in the interests of boys and girls are due to inheritance (34).

The success on two items concerning the relation of learning to experience was very low at the end of the period, although there had been improvement on them during the period (35, 36). Only 33 per cent of the subjects subscribed to the statement that a person learns only in terms of past experience (35), while only 44 per cent rejected the statement that experience obtained from living rather than from books is always the best teacher (36). Apparently, a large number of these subjects were more or less "book shy". Nor is it inappropriate to note, at this time, that only 46 per cent of the subjects accepted the statement that, on the average, the fast readers retain more of what they read than the slow readers—although there had been great improvement on this item during the period (37).

It has already been pointed out that there was considerable failure to indicate realization that thinking involves inhibition (23). It should also be noted that, although there was much improvement on the item during the period, only 48 per cent finally accepted the statement that all learning involves inhibition (38)—a statement of a psychological fact which commonly goes unrecognized by some of the extreme advocates of "self-expression".

Statements 44 through 47 represent beliefs in the doctrine of mental discipline; statement 48 represents a belief which can be considered to run counter to that doctrine and which is equally unsound. It is worthy of note that the number rejecting statement of the doctrine with reference to Latin (44) was fairly high at the beginning although slightly less, if not significantly so, at the end of the period; while the number rejecting the statements of the doctrine with reference to the study of mathematics (45), chess-playing (46), and the "learning of one set of facts" (47) averaged very small at the beginning and remained small—although there was some improvement on all three items during the period. It is also worthy of note that, although a fairly large number rejected statement of the belief that for purposes of mental development one subject is as good as another (48), there was a slight numerical loss in the number successful at the end of the period. It is unfortunate that the doctrine of mental discipline continues to flourish but it would, perhaps, be equally unfortunate if the belief just considered should be given as many subscribers. (More attention should be paid in teaching to the bringing about of real understanding of the complex way in which mental power is actually built up and of the functioning of the many and varied factors involved.)

Statements 49 through 56 represent beliefs which are more or less significant in the personal mental life of an individual, or in his thinking about the problems of mental hygiene. There was improvement on all of the items during the period and the success on several of them reached a fairly high level. The greatest degree of failure was on items representing the bimodal fallacy (50, 51); the failure of the greatest consequence, perhaps, the failure to reject the statement that children inherit a tendency to fear many kinds of living things (52).

SUMMARY AND CONCLUSION

The prevalence of certain concepts and beliefs concerning human abilities, mental processes and learning has been determined with some degree of objectivity for 129 students at the beginning and at the end of their first year of work in education. The changes during the period in the number of students considered successful with reference to the different concepts and beliefs have also been noted. Some successes and some weaknesses have been called especially to attention and a few interpretations ventured. It is, of course, impossible to state what change in the number entertaining any particular concept or belief might reasonably have been expected. It is also generally impossible to determine the probable relative strength of the different factors responsible for the specific results. Nor is it possible to evaluate the success of the courses in education with reference to the more general results, since the items of this study represented but a small fraction of the intellectual context of the courses and no undue stress was placed upon them. Nevertheless, the results should have suggestive value with reference to the content of courses for similar groups of students.

A FURTHER COMPARISON OF INTEREST MEASUREMENT BY THE KUDER PREFERENCE RECORD AND THE STRONG VOCATIONAL INTEREST BLANK FOR WOMEN

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Editor's Note: The accurate measurement of student interest is important in many aspects of the educational program. The author contributes to the discussion of this subject by offering data on two measures in this area.

AN ARTICLE[1] presenting correlations of scores on the scales of the Kuder *Preference Record* with scores on individual keys for the Strong *Vocational Interest Blank for Men* was recently published. The present article presents comparable data for the *Preference Record* and the *Vocational Interest Blank for Women*. The *Vocational Interest Blank for Women* has fifteen keys, each representing a different vocation. The *Preference Record* has nine scales each representing an occupational area.

The method of presentation of the data used in the first article will again be used here; viz., the correlations between keys making up each occupational area on the *Vocational Interest Blank* and the scales of the *Preference Record* will be presented and discussed separately. This method of presenting the data is partially dictated by the fact that the *Vocational Interest Blank* is usually interpreted primarily according to the pattern of interests in an occupational area and only secondarily according to scores on individual keys.[2]

Correlations between the *Preference Record* scales and the *Vocational Interest Blank* keys which comprise the creative area are presented in Table I. The correlations significant at the one per cent level (Lindquist) are double starred and those significant at the five per cent level have only one star. It should be noted that the closest positive correlations are, as would be expected, with the artistic and literary scales. The correlation of the artistic

[1] Frances Oralind Triggs. "A Further Comparison of Interest Measurement by the Kuder *Preference Record* and the Strong *Vocational Interest Blank for Men*." Journal of Educational Research, March, 1944, pp. 538–544.

[2] Special mention should again be made of the fact that all interpretations are based on interests as measured by these two tests and further generalizations should therefore not be made without additional evidence.

TABLE I

CORRELATIONS BETWEEN KUDER PREFERENCE RECORD SCALES AND STRONG VOCATIONAL INTEREST BLANK FOR WOMEN KEYS WHICH COMPRISE THE CREATIVE OCCUPATIONAL AREA

(N = 100 Women)

Strong Vocational Interest Blank Keys	Kuder Preference Record Scales								
	Mechanical	Computational	Scientific	Persuasive	Artistic	Literary	Musical	Social Service	Clerical
Author	—.154	—.309**	—.152	.163	.211*	.534**	.194	—.276**	—.290**
Librarian	—.010	—.106	.024	.045	.318**	.316**	.096	—.409**	—.244**
Artist	.021	—.306**	.016	—.111	.434**	.199*	.334**	—.295**	—.349**

[For an N of 100, according to Lindquist's table, a correlation must have at least the value of .254 to be significant at the one per cent level (indicated by two asterisks) and the value of .195 to be significant at the five per cent level (one asterisk).]

key and the musical scale should be noted. The absence of other positive significant correlations at the one per cent level with this scale gives added significance to this relationship.

Significant negative relationships should be noted. All keys in this area correlate significantly at the one per cent level and negatively with the social service and clerical scales though a positive relationship between the librarian key and at least the social service scale might have been expected; also the author and artist keys with the computational and artistic scales. It should be noted that the library key differs from the other two in that it does not correlate significantly and negatively with the computational key.

Direct comparison of these data to the relationships found between the *Preference Record* scales and the *Vocational Interest Blank for Men* cannot be made by occupational areas because the areas are not exactly comparable between the *Vocational Interest Blanks for Men* and *for Women*. However, some comparisons can be made by individual keys on the Inventory and the scales of the *Preference Record*. Significant positive correlations at the one per cent level consistent for both men and women are: the artist key of the *Vocational Interest Blank* with the artistic, musical, and literary scales of the *Preference Record* and the author key with the literary scale. Significant negative correlations at the one per cent level are the artist key with the computational, clerical, and social service scales, and the author key with the clerical and social service scales.

As was true for men, it may, therefore, be said that those students who have a significant pattern of interest on the keys in the creative occupational area are likely to have artistic and literary interests, and lack computational, social service, and clerical interests as measured by the *Preference Record*. The reader should be reminded that we are speaking of students whose scores are high on certain fallible tests, and not of people in the actual occupations for which the test is scored.

The next occupational group on the women's Inventory has been variously titled. The group which is most nearly comparable on the men's Inventory is usually referred to as the sub-professional area, but this title is not pertinent for the women's Inventory because it contains keys for professional groups as well as non-professional groups. Some writers have referred to it as the "women-in-general" or the "prior-to-marriage" group. These titles give some indication of the definition which research workers have given

this area. In this article it will be referred to, for want of better definition, as the prior-to-marriage group. The data concerning these keys with relation to the scales of the *Preference Record* are presented in Table II.

These data seem to indicate that, for the group as a whole, the negative relationship between these keys and scales is more notable than is the positive. For instance the total block of correlations with the literary scale is negatively significant. In other words, persons having a pattern of interest in this area are likely not to have interests as shown by the literary scale on the *Preference Record*. The two non-professional keys, officer worker and stenographer, have in common significant positive correlations with the clerical scale, and the general office worker key correlates negatively and significantly (at the five percent level) with the musical scale.

Relationships to be expected with the social service scale are also found between two of the three professional keys. The elementary school teacher key correlates positively, at the five per cent level only, with the musical scale while the general office worker key correlates negatively at the same level.

The nursing key differs from the others in that it correlates significantly with the scientific scale but at the five per cent level only.

It might be said in passing that the literay scale on the *Preference Record* has been interpreted to be an indication of academic interest as well as literary. It would seem that there is a possibility that negative relationships as indicated in this table is the force which threw these keys together into the same group rather than a positive likeness between the keys themselves. Many research workers have found the interests of women more difficult to categorize than those of men. Certain counsellors do not use existing interest measures with the same degree of confidence with women as they do with men. This again has been variously explained. Certainly it is true that the same extent of research has not gone into the instruments which measure the interests of women as has gone into the instruments for men. Some research workers explain the difference between the measurement of men's and women's interests by saying that women's interests are not as channelized as men's. It is true that many women do not approach their education with the same outlook as do men for many of them look forward to working only as an interlude between the end of formal education and marriage. However, it is possible that in a society which socially accepts both a career and marriage as commonly for women as for men, women may change their

TABLE II

CORRELATIONS BETWEEN KUDER PREFERENCE RECORD SCALES AND STRONG VOCATIONAL INTEREST BLANK FOR WOMEN KEYS WHICH COMPRISE THE "PRIOR-TO-MARRIAGE" AREA

(N = 100 Women)

Strong Vocational Interest Blank Keys	Kuder Preference Record Scales								
	Mechanical	Computational	Scientific	Persuasive	Artistic	Literary	Musical	Social Service	Clerical
General Office Worker	.066	.238	—.062	—.104	—.187	—.341**	—.234*	.108	.389**
Stenographer–Secretary	—.020	.092	—.184	—.090	—.084	—.282**	—.072	.086	.384**
Nurse	.110	—.096	.226*	—.187	—.061	—.382**	—.085	.343**	—.086
Physical Education Teacher	.075	—.045	.117	—.059	—.081	—.399**	—.076	.305**	.023
Elementary School Teacher	.030	—.077	—.184	—.179	—.030	—.245*	.211*	.190	.121

TABLE III

CORRELATIONS BETWEEN KUDER PREFERENCE RECORD SCALES AND STRONG VOCATIONAL INTEREST BLANK FOR WOMEN KEYS WHICH COMPRISE THE LINGUISTIC AND SERVICE AREA

(N = 100 Women)

Strong Vocational Interest Blank Keys	Kuder Preference Record Scales								
	Mechanical	Computational	Scientific	Persuasive	Artistic	Literary	Musical	Social Service	Clerical
Teacher of English	—.269**	—.257**	—.239*	.300**	.060	.544**	.196*	—.162	—.179
Lawyer	—.047	—.007	—.067	.411**	—.102	.315**	—.216*	—.174	.004
Social Worker	—.191	—.003	—.067	.197*	.086	.263	—.080	.103	—.111
Teacher of Social Sciences	.031	.061	—.030	.142	—.015	.054	.002	—.057	.033
Y. W. C. A. Secretary	—.163	—.115	—.079	.332**	—.130	.130	—.119	.229*	—.138

attitudes toward education and employment and marked differences in measured interests between the sexes may disappear. This point is a controversial one and is mentioned here only as an issue which is related to the difficult interpretation of the data just presented.

The data presented in Table III are for two partially related groups of keys. The separation is indicated by the line under the teacher of English key. To be noted immediately when examining these data is the block of positive significant correlations with the persuasive scale. These correlations seem again to be indicative of the main likeness between these five keys though, of course, there may be other relationships common to all which are not apparent in these data.

The teacher of English key also has a high positive relationship to the literary scale and a positive relationship significant at the five per cent level only with the musical scale. Significant negative correlations appear with mechanical, computational, and scientific keys which is a relationship to be expected. The similarity of the correlations of this key with the *Preference Record* scales to those of the author key should be noted.

The factor analysis of the keys on the men's Inventory threw the lawyer key with the author-journalist and advertising man keys. All correlate significantly with the literary scale. In this way the teacher of English and lawyer keys on the women's Inventory resemble keys measuring similar interests on the men's Inventory. However, men who have measured interests on the lawyer key are likely to have measured interests on the musical scale on the *Preference Record* while the correlation between the law key on the women's Inventory and the musical scale is negatively significant at the five per cent level.

The fact that there are no significant correlations between the teacher of social sciences key and any scales of the *Preference Record* is interesting and may have significant implications. The same scale for men falls with service professions and correlates significantly and positively with the persuasive and social service scales, and significantly and negatively with the mechanical and scientific scales.

The Y.W.C.A. key correlates positively and significantly with the social service and persuasive keys which relationship closely corresponds to the relationship indicated by the correlations of the Y.M.C.A. key with the *Preference Record* scales.

TABLE IV

CORRELATIONS BETWEEN KUDER PREFERENCE RECORD SCALES AND STRONG VOCATIONAL INTEREST BLANK FOR WOMEN KEYS WHICH COMPRISE THE SCIENTIFIC AREA

(N = 100 Women)

Strong Vocational Interest Blank Keys	Kuder Preference Record Scales								
	Mechanical	Computational	Scientific	Persuasive	Artistic	Literary	Musical	Social Service	Clerical
Dentist	.239*	.250*	.566**	—.284**	.022	—.342	—.185	.031	—.072
Teacher of Math. & Science	.250*	.293**	.513**	—.232*	—.075	—.374	—.162	.091	—.015
Physician	.199*	—.036	.497**	—.002	.015	.042	—.136	.019	—.392**

TABLE V

CORRELATIONS BETWEEN KUDER PREFERENCE RECORD SCALES AND STRONG VOCATIONAL INTEREST BLANK FOR WOMEN KEYS WHICH COMPRISE THE PERSUASIVE AREA

(N = 100 Women)

Strong Vocational Interest Blank Keys	Kuder Preference Record Scales								
	Mechanical	Computational	Scientific	Persuasive	Artistic	Literary	Musical	Social Service	Clerical
Life Insurance Saleswoman	—.115	.005	—.330**	.338**	—.206*	.151	—.202*	.094	.127

The correlations for the scientific occupational area appear in Table IV. The grouping of these keys differs from the way they are grouped on the men's inventory where they appear in group one which comprises what is often referred to as the "creative-scientific" group. The teacher of mathematics and physical science on the men's inventory falls in with the sub-professional or men-in-general occupational area.

These data would seem to indicate that this group is the most closely related group on the women's inventory. Correlations with the mechanical scale are positive and significant at the five per cent level and two keys correlate significantly and positively with the computational scale. The most marked relationship is to the scientific scale, which is as would be expected. Two significant negative correlations between the dentist and teacher of mathematics and physical science keys and the persuasive scale should also be noted. The fact that for two scales, the computational and persuasive, significant correlations appear for the dentist and teacher of mathematics and physical science keys, but not for the physician key, and that the physician key is the only one of the group which correlates significantly, though negatively, with the clerical key, indicates that these two keys are perhaps more closely related to each other than they are with the physician key.

Table V presents the data for the life insurance saleswoman key which falls in an occupational area by itself. This key correlates significantly and positively with the persuasive scale on the *Preference Record* though the correlation is not as large as the comparable one for men which has a value of .58. There are no other positive significant correlations with the *Preference Record* scales. Significant negative correlations are with the scientific, artistic, and musical scales.

This key for women differs from the one for men, for, besides the positive significant correlation with the persuasive scale, the key for men also correlates significantly and positively with the literary and social service scales and negatively with the mechanical and scientific scales.

Counsellors who will study the data presented in this series of four articles will be aided in their interpretation of both interest inventories. One further article will be presented soon on the relationship of scores on these inventories to sex.

THE CONTRIBUTION OF THE EXCURSION TO UNDERSTANDING

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Editor's Note: Much is said and written these days about making learning more meaningful. The author offers data on the contribution of the excursion to learning.

THE purpose of this study was to measure the contribution of an excursion procedure, when used as a summary device, to the understanding of content material taught in the classroom by a highly illustrative method.

PROBLEM

School excursions before World War II were extensively used in European countries. Their chief development had been in Germany during the nineteenth century. From Germany the idea spread, in the last half of the century, to the British Isles, to other European countries, and to the Orient. Charles and Frank McMurry, influenced by the teachings of Herbart, were advocating the use of excursions in the teaching of geography and science in the United States at the turn of the century. In the United States up to the present time, however, the excursion, employed as a device to supplement classroom teaching, has not been widely used.

Although excursions were employed by schools as a definite part of the school program, not until Rein's teaching at the University of Jena following 1885 did they generally become a procedure contributing directly to the teaching of subject matter in the classroom. The development of the excursion had been characterized by wide variation in procedure, but as used by Rein at Jena and as advocated in the writings of the McMurrys the procedure had three parts: preparation for the excursion, the trip, and the follow-up activities comprised largely of discussion. Charles McMurry had presented detailed discussions of excursions using these steps as early as 1903.[1] The relative position of the excursion in the teaching unit or in an area of content has not been uniform, at times being used as introductory,

[1] McMurry, Charles, *Special Method in Geography*. New York: The Macmillan Company, 1903; *Excursions and Lessons in Home Geography*. New York: The Macmillan Company, 1904.

at other times for intra-study purposes, and at other times for purposes of summary or recapitulation.

The values claimed for excursions include the following: (1) they provide for acquisition of accurate first-hand information, (2) they promote more intelligent citizenship, (3) they provide for social training, (4) they broaden and enrich experiences, (5) they develop a love of travel, (6) they create interest, and (7) they form a connecting link between school and community. Although such claims have been made in this country and abroad, only three experimental studies, to the writer's knowledge, have been made to test such claims. Two of these studies, one by Grinstead[2] and the other by Atyeo,[3] measured the contribution of the excursion, when used to supplement classroom instruction, to the acquisition of information. Fraser,[4] besides testing for information, tested to determine the effect of the excursion on attitudes and ability to generalize. No study has been reported which has attempted to measure comprehensively the contribution of the excursion to understanding.

PROCEDURE

The population used in this study was composed of the thirty-two children of the fifth grade of the University Elementary School, State University of Iowa, Iowa City, Iowa. Two groups, each composed of sixteen pupils, were assigned from this population using Fisher and Yates' *Table of Random Numbers*. The groups were not rotated but were reassigned to two groups by the same method for each of four experiments conducted in the study. In each of the four experiments, one group was tested before the excursions were taken and the other tested after the excursions were taken. The former is referred to as the Pre-Excursion Group and the latter as the Post-Excursion Group. The population was again reassigned by the same method for the oral interview test (Part 4) of each experiment because a smaller sample than was used in the remainder of the tests was desired.

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[2] Grinstead, R. W., *An Experimental Evaluation of the School Excursion*. Masters Thesis. Los Angeles, California: University of Southern California, 1929.

[3] Atyeo, Henry C., *The Excursion as a Teaching Technique*. Contributions to Education, No. 761. New York: Teachers College, Columbia University, 1939.

[4] Fraser, James Anderson, *Outcomes of a Study Excursion*. Contributions to Education, No. 778. New York: Teachers College, Columbia University, 1939.

The content used in the study was a unit prepared by the writer on erosion and conservation of soil. The major problem and the sub-problems of the unit were:

How can soil erosion be prevented?

I. What causes water concentration?
II. How do water courses grow?
III. How can rate of runoff be controlled?
IV. How can amount of runoff be controlled?

The unit, which included a list of principles involved in each sub-problem, was prepared preceding the study and was used as a guide by the writer in his teaching. For purposes of teaching and testing each sub-problem was treated as a separate experiment, the study thus being composed of four experiments, I, II, III, and IV. Sub-problem I above was treated in Experiment I, sub-problem II in Experiment II, etc.

For purposes of obtaining measures of understanding when one group was taught by the classroom method and the other by the classroom method with supplementary excursions, the following sequence in procedure shown for Experiment I below was set up for each experiment:

Experiment I

Pre-Excursion Group	Post-Excursion Group
Classroom study	Classroom study
Test Form A–I, Parts 1, 2, 3, and 4	Test Form B–I
Excursions and follow-up discussion	Excursions and follow-up discussion
Test Form B–I	Test Form A–I, Parts 1, 2, 3, and 4

The procedure for Experiment I (and for Experiments II, III, and IV) should be read as follows: The material of Sub-problem I was presented to both groups in the classroom. Test Form A–I, parts 1, ,2, 3, and 4 was then administered to the Pre-Excursion Group and Test Form B–I to the Post-Excursion Group. Both groups were taken on the excursions and participated in the follow-up discussions. Following the excursions, the Post-Excursion Group was administered Test Form A–I, parts 1, 2, 3, and 4, and the Pre-Excursion Group was administered Test Form B–I.

The problem approach was used in the teaching of the material in each experiment. Problem raising was followed by study using books, bulletins, pamphlets, graphs, maps, tables, charts, experiments, samples, slides, films, and teacher drawings. Most of the study and illustrative materials used were obtained from the Soil Conservation Service of the United States Department of Agriculture through the courtesy of Walter W. Johns. The writer made every possible effort to develop understanding in the classroom by providing for individual differences in study materials, assigning special reports, closely supervising study periods, giving individual aid to slow pupils, reteaching to groups and individuals, and by providing all illustrative media available.

The excursions followed a carefully planned three-step procedure: preparation, trip, and follow-up. In preparation for an excursion, plans were carefully made with the pupils. The purpose or purposes were set up and clearly defined; the route was discussed and if the places for study were out of town, plans were made for transportation; standards of conduct and organization were set up; the method of study while on the excursion was illustrated and discussed; and the follow-up procedure (generally discussion) upon return to the classroom was discussed. The method of study on the excursion was a problem solution procedure. For example; the problem used on the excursions of Experiment III was to evaluate the land use on each slope visited. Time was given for the pupils to examine the conditions on the slope, make their decisions, and be ready to defend their decisions. The judgment exercised in the decisions and explanations was the test of the pupils' ability to apply principles, to see relationships, and to respond to the essentials of the problem. This same exercise of judgment was provided for in the classroom by the use of kodachrome slides. One problem situation was not abandoned until all explanations had been given and relevant questions asked because the purpose was to understand the situations studied and not to study a given number of situations in a given amount of time. Upon return to the classroom the important observations made on the excursion were reviewed by the pupils, questions were answered, and new solutions, if any had occurred to the pupils, were discussed. Every effort was made to use the excursion procedure to the best possible advantage known to the writer from his study of excursion techniques and experimentation with them at the elementary school level.

The two groups were taught together in the classroom and therefore were given the same amount of time in classroom study and discussion. The Pre-Excursion Group in each experiment took the Form A Test immediately following the classroom study and discussion whereas the Post-Excursion Group in Experiment I was given an additional twenty-two minutes (three excursions) of excursion procedure for each hour spent in the classroom, in Experiment II an additional eleven minutes, in Experiment III an additional eighteen minutes, and in Experiment IV an additional eight minutes.

Criteria of understanding were obtained from writings on learning and the following were arbitrarily selected for purposes of testing in this study:

1. Ability to see relationships.
2. Ability to recognize and apply principles in new situations.
3. Ability to recognize and respond to essential aspects of the problem and not to respond to the non-essential aspects of the problem.
4. Ability to organize in sequence the essential relationships in the problem.

Tests designed to measure the degree of understanding as described by the criteria above were prepared for each experiment. Form A of each experiment was composed of four parts described below:

1. Thirty multiple choice items using drawings and designed to measure ability of the pupils to apply principles.

Example: Which land use would be best on the slope above this pond?

A. Grass
B. Corn
C. Lespedeza
D. Oats

2. Free response test composed of six pictures, each presenting a problem in erosion and conservation of soil.

Example: What has caused the damage to the farmer's fence? Explain how this could have been prevented. (See illustration at top of insert facing page 207.)

3. Thirty multiple choice items each designed to test the ability of the pupils to apply principles of erosion and conservation of soil in abstract situations.

Example: In areas such as Texas where the rains are often sudden downpours should the terraces be:

a. Farther apart and lower?
b. Farther apart and higher?
c. Closer together and lower?
d. Closer together and higher?

4. Oral interviews using three pictures and designed to measure depth of understanding in response to both key questions and follow-up questions. These were administered individually and were recorded by a stenographer.

Example: There is a gully in the weedy area through this cornfield. The corn rows run down the slope to this gully. The farmer is letting weeds grow up in an effort to stop the gully. Do you think he will be successful? Why or why not?

What would be the best procedure to follow? Explain why?

What is the most important thing to do in stopping a gully? Explain why? (See illustration at bottom of insert facing page 207.)

Test B for each experiment was free response, asking the pupils to list important points learned during the study of the content of the experiment. These tests were not interpreted in the study.

TEST RESULTS

The results of testing in the four experiments were treated by test parts instead of test forms. Test form A–I, for example, was composed of four parts, 1, 2, 3, and 4, as were Test Forms A–II, A–III, and A–IV. Part I of Test Form A–I was the same type of test as that in Part I of Test Forms A–II, A–III, and A–IV. The same relationship existed between Parts 2, 3, and 4 of each test form. The treatment of the parts instead of the forms was followed because each part was a different type of test designed to measure one or more specific criteria of understanding.

In scoring Parts I (multiple choice test using drawings) and 3 (multiple choice items) one point was given for each item correct. Three analyses were made of Part 2, (free response test using picture) one for expressions of principles applied in the tests, one for relationships reported,

and a third for the length of relationship sequence or sequences in the report of each pupil. A relationship would be "bluegrass and soil," "terraces and rate of runoff," etc. A sequence of two relationships would be: "dense bluegrass-rate of runoff-amount of soil lost." (The pupil wrote, "Bluegrass will slow up the rate of runoff so there won't be so much soil lost.") Part 4 (oral interviews) was scored on the basis of relationships reported in response to key questions and of relationships reported in response to follow-up questions; thus the ratio of relationships reported to number of questions was obtained.

The differences between means of the two groups favored the Post-Excursion Group on each part of each test form although, in Parts 1 and 3, the differences represented less than five correct responses per pupil on all but Test Form A–III. The test[1] was applied to the difference between means on each part of each test form to determine the significance of the obtained difference. The value of the composite x^2 corresponding to the combined probabilities of Part 1 in the four tests, Part 2 in the four tests, etc., was obtained.[2]

Table I gives the levels of significance obtained.

The differences which favored the Post-Excursion Group were more consistently significant in the analysis of Part 2 (free response test using pictures) than in Part 1 (multiple choice test using drawings) and 3 (multiple choice items). The reliability of Parts 1 and 3 in each test form ranged from .49 to .72. It is probable that the multiple choice tests constructed by the writer did not sufficiently measure the increase in understanding resulting from the excursion procedures.

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[1] Lindquist, E. F., *Statistical Analysis in Educational Research*, New York: Houghton Mifflin Company, 1940. Pp. 57. Formula for

$$t = \frac{m_1 - m_2}{\text{est'd } \sigma m_1 - m_2}$$

$$\text{est'd } \sigma m_1 - m_2 = \sqrt{\frac{\Sigma x^2 + \Sigma y^2}{n_1 + n_2 - 2}\left[\frac{(\Sigma x^2) + (\Sigma y^2)}{n_1} + \frac{(\Sigma y^2)}{n_2}\right] \cdot \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}$$

$$df = n_1 + n_2 - 2$$

(Derived from Formula 10 in Lindquist, E. F., *Statistical Analysis in Educational Research*).

[2] See Lindquist, *Ibid.* pp. 46–47.

TABLE I

COMPARISON OF RESULTS FOR THE TWO GROUPS, A SUMMARY OF LEVELS OF SIGNIFICANCE OBTAINED FROM TEST FORMS A-I, A-II, AND A-IV, PARTS 1, 2, AND 3

Test-Form	Part 1 Application of Principles	Part 2 Application of Principles	Part 2 Relationships Reported	Part 2 Length of Relationship Sequence	Part 3 Application of Principles
A-I	not sig.	.1%	.1%	1%	not sig.
A-II	not sig.	not sig.	2%	not sig.	not sig.
A-III	5%	1%	.1%	.1%	1%
A-IV	1%	not sig.	5%	5%	1%
χ^2 (Combined probabilities	2%	.1%	.1%	.1%	1%

The quantitative differences between the means of the two groups in the three analyses of Part 2 (free response test using pictures) are larger than those on Parts 1 (multiple choice test using drawings) and 3 (multiple choice items). As shown in Table II, the Post-Excursion Group applied more principles per picture than did the Pre-Excursion Group, reported 3.7 relationships per picture whereas the Pre-Excursion Group reported only 2.4, and reported an average relationship sequence more than twice the length of that reported by the Pre-Excursion Group.

TABLE II

COMPARISON OF RESULTS FOR TWO GROUPS, A SUMMARY OF NON-STATISTICAL ANALYSES OF RESULTS FROM PART 2, TEST FORMS A-I, A-II, A-III, AND A-IV

	Application of Principles		Relationships Reported		Length of Relationship	
	Average number of Principles applied per pupil		Average number of relationships reported per pupil		Average length of relationships reported per picture per pupil	
Test Form	Pre-Exc.	Post-Exc.	Pre-Exc.	Post-Exc.	Pre-Exc.	Post-Exc.
A-I	5.5	9.0	9.286	15.296	1.333	2.619
A-II	8.467	9.333	13.8	19.0	1.933	2.311
A-III	6.967	13.312	12.133	27.312	1.356	3.932
A-IV	11.500	15.143	20.428	29.214	3.131	8.833
Av.	1.313	1.949	2.318	3.784	1.292	2.949

On the oral interview test (Part 4 in each test form), the Post-Excursion Group reported an average of twice as many relationships in response to both key questions and follow-up questions as were reported by the Pre-Excursion Group.

Several observations made by the writer during the study and from the analyses of Parts 2 (free response test using pictures) and 4 (oral interviews) seem sufficiently important to report.

1. Neither group, in the opinion of the writer, showed better judgment as measured by pertinence of principles applied or relationships reported on Part 2, the difference being that more principles were applied and more relationships reported by the Post-Excursion group. In the oral interviews, however, the Post-Excursion Groups were able to stay on the pertinent aspects of the problem longer in response to follow-up questions than were the Pre-Excursion Groups as evidenced by their ability to report twice as many relationships in response to follow-up questions as were reported by the Pre-Excursion Groups. The oral interview groups were small, being composed of from three to five pupils per experiment and therefore the results may not be given as much consideration as if the groups had been larger. In conducting another experiment of this type the writer would consider including more pupils in the oral interview tests.

2. Neither group, as judged by the writer, was more specific than the other in relationships reported or principles applied in Part 2. This would be expected because the pupils had been trained both in class and on excursions to be specific and were held strictly accountable for generalities.

3. Although the content was developmental in nature, few principles were reported which were to be specifically taught in the subsequent experiment.

4. There was a difference of only one principle between the two groups in total number of principles applied in the study. (57 by Post-Excursion Group and 58 by Pre-Excursion Group.) This was probably due to the fact that the pictures used did not permit the application of all principles (87). More of the different principles taught in the study, however, were consistently applied by the Post-Excursion Group on each picture in each experiment.

5. There was very little stereotype of expression in application of principle by either group. This was perhaps the best evidence of understanding on the part of both groups obtained in the study.

6. In general the statistical and quantitative results from the first two experiments were less than those obtained from the last two experiments. The writer has observed in this study and in his previous experience with excursions that pupils learn how to profit from excursions. The results from this study seem to verify this observation.

CONCLUSIONS AND IMPLICATIONS

1. With the provision that the postulated criteria of understanding (that is, numbers one, two and four) be accepted as valid, the conclusion may be made that the excursions in this study contributed to understanding when employed as a summary technique.

2. Too much should not be expected of the excursion per se.

3. Depending upon teacher qualification and nature of community setting, it would seem advisable to include a unit on erosion and conservation of soil at the upper grade level of the elementary school. Many of the principles are within the experience of the children of lower grades. The pupils of the upper grades are able to apply more principles to the problem situations and to see more relationships in the problem situations than the writer had expected because of the technical nature of the material.

4. Instead of recommending that a certain part of the time allotted to science and social studies be given to excursions, the writer recommends, as a result of this study, that the excursion be used as a major instrument of instruction in cases where illustration of subject matter is readily accessible in the community, and especially in cases where the concrete experiences of the pupils have been limited.

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EFFECT OF CONTEXT ON LEARNING A FRENCH VOCABULARY

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Editor's Note: The importance of meaning is well recognized. The author presents data on the effect of context on learning a French vocabulary.

STATEMENT OF PROBLEM AND PROCEDURE

THE problem of this study was to evaluate the effect of context upon the formation of associations of French words with their English equivalents. The importance of meaning is well recognized as a vital aid in learning. Meanings of words are modified by the context in which they appear. The present problem arises from the fact that although meaning is known to facilitate the formation of word associations, contextual meaning may actually inhibit the formation of associations required in vocabulary learning. The specific problem of this investigation is to evaluate the effect of the broader contextual meaning upon the learning processes required for the formation of word associations. The learning content and the procedure followed in this study were the same in all respects except for the experimental variable referred to as the context. Context is used in the sense of connected meaning, thought content or logical sequence.

The learning content consisted of an orientation lesson in Spanish. Through this method the children learned exactly how they were to proceed in the experiment.

The regular learning materials consisted of extracts from a story in easy French, "The Eiffel Tower".[1] This exercise was given to Group A, hereafter called the experimental group. A second French exercise, Exercise B, which contained no story was given to Group B, hereafter referred to as the control group. The vocabularies of Exercise A and Exercise B were identical. Each word appeared with the same frequency in the two exercises. The number of words intervening between repetition of words, i.e., the repetition sequence, were the same for the two exercises. The only

[1] Cochran, Grace and Eddy, Helen M., Si Nous Lisions, Chicago, Ill., The University of Chicago Press, 1929.

variable thus introduced by the two exercises was the presence and absence of the story context.

A French vocabulary reference list was used. This so-called "dictionary" contained every word form found in the French exercises together with the English meaning. Each word form was included to avoid confusion which would arise from lack of understanding and recognition of grammatical forms. There were spaces provided for each subject to tally the frequency with which each word was looked up during each learning period. Six tests were used. These tests contained all of the words found in the learning exercises. The tests were in the form of sentences requiring translation. Words were repeated as few times as possible. Each test contained different word combinations, i.e., consisted of different sentences varying the contextual meaning, so that the subjects could not memorize the words on the basis of position, order or context.

"The final evaluation of the effectiveness of the two methods of teaching was based upon data obtained from two groups, each containing twenty-nine seventh and eighth grade pupils who had completed the experiment in every detail. These two groups were matched on the basis of mental age, as determined from the Otis Intermediate Self-Administering Tests of Mental Ability, Form C. The mental age ranged from eight years eleven months to fifteen years and eleven months."

The learning periods, eight minutes in length, were always followed by a test. The study periods and tests were given on Mondays, Wednesdays, and Fridays. The experiment was carried on over a period of six weeks.

The learning exercises and tests were administered by the same individual to both groups simultaneously. It could hardly be assumed, therefore, that motivational factors or other conditions apart from the experimental variable could have operated to the advantage of one or the other of the groups.

The subjects did not know that the words in the learning exercises were French. The children were told that the words were symbols and that prizes would be given each one. To further stimulate motivation, a grand prize was offered to the individual learning the greater number of symbols. The subjects knew that there were different forms of the story, but they did not know how these forms differed. As far as could be observed, this factor did not affect the interest or effort of any of the subjects.

ANALYSIS OF THE RESULTS

The means of the mental ages of the two groups were equivalent; namely, twelve years six months. The standard deviation for the experimental group was 1.99. The standard deviation for the control group was 1.85.

TABLE I

GENERAL PERFORMANCE OF EXPERIMENTAL AND CONTROL GROUPS

Factors Scored	Experimental Group			Control Group		
	Mean	S.E.M.	S.D.	Mean	S.E.M.	S.D.
Words translated in 8 minute study	55.31	4.16	22.20	46.69	3.65	19.64
Words translated on final test	91.10	5.41	29.10	81.38	4.31	23.18
Words looked up in "dictionary"	5.52	.91	4.92	9.07	1.20	6.46
Errors made on final test	5.03	.99	5.32	4.86	.70	3.78

Table I shows the mean, the standard error of the mean, and the standard deviation for the experimental and control groups for the final eight minute study period for the several scores obtained. The statistical measures for obtaining the data in Table I were those employed by small sample technique.

TABLE II

SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE MEANS OF THE EXPERIMENTAL AND CONTROL GROUPS

	Difference in Means	t
Number of words "translated" in 8 minutes study	8.62	1.61
Words "translated" on final test	9.72	1.60
Words looked up in "dictionary"	3.55	1.93
Errors made on final test	.17	.16

Table II shows the differences in the means and the t values, for words translated in the final eight minute study period, words translated on the final test, words looked up in the "dictionary", and errors on the final test. None

of the four differences is statistically significant, although the obtained differences were consistent in favoring the experimental group.

Three of the above obtained measures, which favored the experimental group, were tested by the X^2 test. It appeared legitimate to exclude the number of errors made in "translation". The result of the X^2 test for words "translated", words looked up in the "dictionary", and words recognized on the final test favored the experimental group at the five percent level.

TABLE III

RELIABILITY OF THE DIFFERENCE IN THE STANDARD DEVIATION OF THE EXPERIMENTAL GROUP

	S. D. of Experimental Group	S. D. of Control Group	F
Words translated in 8 minutes	22.20	19.64	1.27
Words translated on final test	29.10	23.18	1.58
Words looked up in "dictionary"	4.92	6.46	1.72
Errors made on final test	5.32	3.78	1.98

Table III shows the standard deviation of each group and the variance ratio, F. The only statistically significant difference shown is in errors made on the final test.

CONCLUSIONS

No statistically significant differences, at or below the five percent level, were found in the mean performance of the experimental and control groups for the four criteria scores: (a) words "translated" during the learning exercises; (b) words "translated" correctly on the final test; (c) frequency of "dictionary" usages; and (d) errors in "translation" on the final test.

No statistically significant differences were obtained in the standard deviations of the two groups except for errors on final test which is at the five percent level.

When the X^2 test was used on the three scores for the final learning period, words "translated", words looked up in the "dictionary", and words recognized on the final test, the result favored the experimental group at the five percent level.

THE PROBLEM OF THE PREDICTION OF COLLEGE SUCCESS

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Editor's Note: Much work with moderate success has been done on the prediction of college success. The author believes that prediction might be improved through the use of aptitude tests closely associated with several subject matter fields.

THE problem of the selection of students for successful college work has long been a point of attack and interest in the guidance of students. Almost every accredited institution of higher learning now administers some battery of entrance tests by means of which poor student prospects are eliminated and good prospects selected. Research workers have now for some years attempted to discover what tests would be most valuable to use for prediction and guidance. In general, the results of these researches have not been as gratifying as one might wish. The correlations between test scores and achievement records have been only moderately high. Even multiple correlations utilizing whole batteries of tests have been only what one might term as substantial. Few coefficients of .70 or more have been reported.

Some researchers have pointed out that one reason for the absence of more significant correlations resides in the unreliability and resulting invalidity of achievement ratings. It now seems clear that another reason for lack of higher coefficients resides in the real lack of correlation due to the great varieties of abilities involved. Achievement records, even though reliable and valid, might not be expected to be accurately predicted from test scores which are measures of abilities not identifiable with the kind of achievement being predicted. To be sure, there is the general factor of intelligence, but the function of entrance tests is accurate prediction of the quality of work toward which the college effort is directed. It can no longer be doubted that the various types of so-called "new-type" tests measure different functions. It seems logical that predicting tests should be of this new-type sort and test the same abilities as the abilities being predicted. It is not reasonable to expect valid prediction when the compared abilities—potential and realized—are different and perhaps considerably unrelated.

The thesis of this discussion, therefore, is that prediction tests *intended for prediction alone* should be of the same *type* and in the same field as the

achievement which is being predicted. Instead of giving general intelligence tests, then to predict scholastic achievement in a college course in mathematics, for example, tests involving the expected skills in mathematics should be used. To predict success in medicine, dentistry, pharmacy, or nursing, the pre-tests must be closely related to the achievement tests used. This implies that achievement ratings which are mere personal judgments of instructors must be replaced by objective ratings of the sort used as pre-tests if accurate prediction is to be expected.

As an example of this viewpoint, reference is here made to correlations obtained in nursing education at the Medical College of Virginia. This past year a comprehensive institutional test in basic science was constructed and given at the expiration of the period of formal instruction in science. The science courses included chemistry, microbiology, anatomy, and physiology. The comprehensive included items classifiable as physics, chemistry, biology, anatomy, and physiology—260 items in all—allowing two hours of working time. The correlation between the student ranks on this test and the average ranks of entrance tests including the American Council Psychological, the Otis Test of Mental Ability—Higher Examination—, a local test in, "Exercises in Reading Medical Literature," and a test in arithmetic was .90 $\pm$ .02 for 40 students. While the number of cases is small, this would seem to indicate that when achievement is measured by a comprehensive objective test, a good battery of entrance tests of a similar type will predict future achievement much more accurately than we have been able to do heretofore.

The reliability coefficient of the science comprehensive test by the split-halves method is .94 $\pm$ .01.

It may be of interest to add that the ranks in the test correlated with instructors' grades in the science courses named, represented as a grade-point ratio, with a coefficient of .77 $\pm$ .05. The correlation between these grade-point ratios and the average rank in the entrance tests named was .50 $\pm$ .09.

These data while meager seem to substantiate the thesis that entrance tests and achievement tests should be of the same sort.

From the standpoint of curriculum development with which we are primarily interested, some speculation is in order. When it is possible to measure abilities themselves, instead of so-called achievement in chemistry, or physics, or some other conventional subject course, we shall probably move on to curriculums devised to develop these abilities more specifically. In

other words, speculation indicates the possibility of new courses in our schools and colleges based on the concepts of specific ability development. Then we may hope for emphasis upon the unity of all knowledge in functional personality, and elimination of some of the present barriers existing between present conventional courses of study. We could then have English in all courses, or science in all courses, or an approach to that concept. The artificial barriers between some of our subject divisions and departments would be broken down. This is speculation, to be sure, but speculation is a fruitful source for hypothesis which often results in discovery.

A CHART TO FACILITATE THE ESTIMATION OF THE COEFFICIENT OF PARTIAL CORRELATION

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Editor's Note: Many of the more complex statistical procedures can be made usable to the field worker only by some simplifying device. The author supplies such a device.

THE casual or lay reader of an article in which a coefficient of correlation is presented, interprets it readily enough as a rough measure of the amount of a common factor or factors operative in the two traits correlated. If he has had a bit more experience, he may take account of the probable error. As to the nature of the common factors, he will probably make some inference based on his experience. If he is statistically trained he has the techniques of factor analysis or partial correlation to fall back on, should he be willing to take the time to make use of them. The non-statistically minded psychologist or teacher concerned with measurements will probably not have at hand the tables of $\sqrt{1 - r^2}$ and the computational aids, slide rule or calculator, without which the computation of a partial correlation coefficient is a laborious task.

The partial correlation technique will enable one to answer questions, such as, What would happen to the correlation between chemistry grades and physics grades if the mathematics differential were eliminated? What correlation would remain between two performance tests if manual dexterity were ruled out? What would be the correlation between rhythm and pitch if tonal memory were held constant? How convenient it would be if the answer to such questions could be obtained by some ready and simple device!* It is safe to say that even workers accustomed to making the computations feel no confidence in guesses made from an inspection of the figures alone.

To meet this need, the following technique was devised. The chart here presented offers a close approximation of the reciprocal of the denominator of the partial correlation equation. The one complex feature of the computation is thus by-passed. The procedure can best be shown by illustration. For that purpose data from a table in Tiffin, "Industrial Psychology", presenting the intercorrelation of traits in a merit-rating scale have been chosen.

* Several labor-saving methods have been devised, notably the nomograph in the Appendix of Kelley, "Statistical Methods", but none of these are characterized by simplicity.

Safety (a) and Accuracy (b) ---------- $r_{ab} = .63$
Safety (a) and Health (c) ---------- $r_{ac} = .25$
Accuracy (b) and Health (c) ---------- $r_{bc} = .84$
Safety (a) and Judgment (d) ---------- $r_{ad} = .62$
Accuracy (b) and Judgment (d) ---------- $r_{bd} = .84$

For the sake of completeness the formula for the coefficient of partial correlation is given:

$$r_{ab.c} = \frac{r_{ab} - r_{ac} \cdot r_{bc}}{\sqrt{1 - r^2_{ac}}\sqrt{1 - r^2_{bc}}}$$

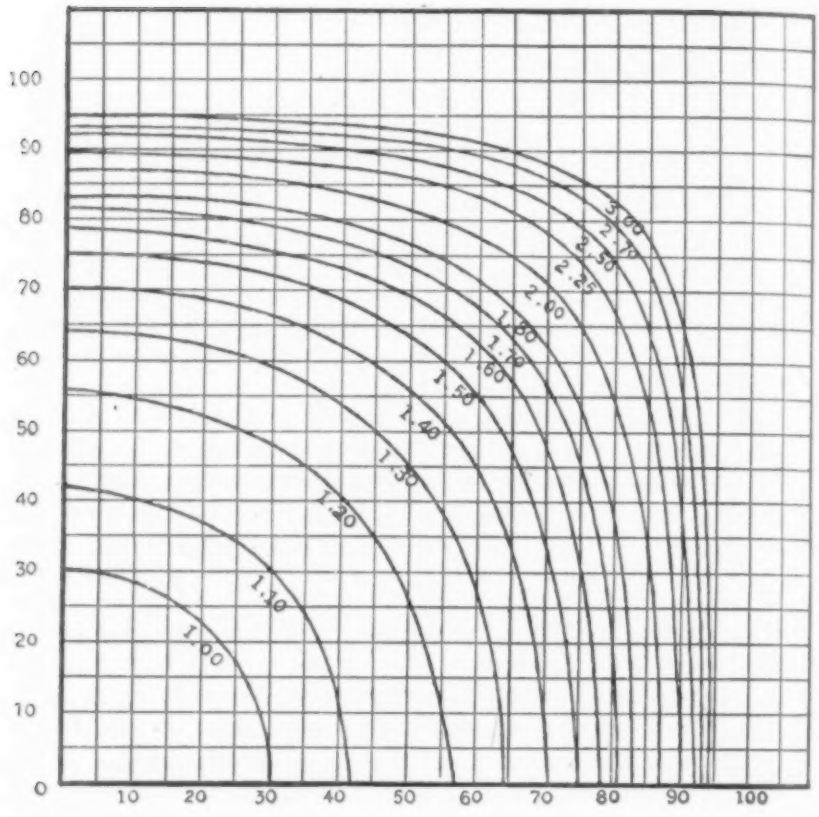
Translated, this means that the major correlation, r_{ab}, is reduced or increased by the two minor correlations, r_{ac} and r_{bc}. In this instance we will determine first the corrected correlation between Safety and Accuracy, when the factor of Health is held constant.

The numerator is quite easy to compute: $.63 - (.25x \cdot 84) = .42$. This amount is here called the residual. Turning to the chart, in which the two coordinates are the values of the two minors, taken in either order, we find the intersection of the coordinates for .84 and .25 lies about half way between the curve of 1.80 and that of 2.00. Hence 1.9 may be taken as the reciprocal. Multiplying the residual, .42, by this reciprocal, we arrive at .80, a partial coefficient that shows that health has acted as a constricting factor upon the correlation between safety and accuracy. The value as found by more refined statistical methods is .799.

This process, consists then, in brief, in multiplying .84 by .25 (since but two places are needed, an estimate will suffice), subtracting from .63 and multiplying the remainder by 1.9, the value read from the chart.

Now we will see what effect the trait called Judgment has had upon this same correlation between Safety and Accuracy. The numerator is $.63 - (.62x \cdot 84)$. Estimating the product roughly as .51, the residual is .12. The intersection of the .84 and .62 coordinates is in the vicinity of the 2.25 curve. Multiplying the residual by this value gives .27. This suggests that judgment accounts for a large proportion of the correlation that exists between safety and accuracy.

But perhaps you may wish to make the computation a little more exact. Multiplying out .62 by .84 shows it to be nearer .52, the residual thus being .11. The position on the chart by interpolation seems to be about 2.35. The product is .258. Computed by more refined statistical methods, the coefficient is found to be .257.



The method here described is, of course, no substitute for the full computation where exactness is called for, but it does supply a means of arriving quickly at an approximate figure and as such has numerous advantages. It is particularly useful as a check on the accuracy of the coefficient found by the long method. Certainly a table of intercorrelations is much more meaningful to one who can read therefrom the second order relationships as well as those of the first order.

EDITORIALS

NEW DIRECTION IN EDUCATION

A STRIKING example of the cultural lag in education is the traditional course in the secondary schools. Though this is proudly called a "scientific age," the mental world in which many students dwell is not only pre-Newtonian but primitive. Modern wars as well as industries are "technologized"; the attitudes of adolescents are in many cases archaic and their system of belief often infantile.

We teach facts but how often does the "knowledge" crystallize into attitudes and behavior consonant with scientific thinking? Are the young, as the result of their exposure to courses in General Science, Biology, Physics, and Chemistry, and for that matter in other areas inclined to reason more critically and independently or do they keep their scientific "knowledge" locked up in water-tight compartments, to be displayed on specially appropriate occasions? To ask these questions is to answer them.

Whereas few teachers would hesitate for a moment in correcting a great breach of good manners, how many would feel it incumbent upon them to correct an absymally wrong in his thinking? So long as his facts are straight, his reckless generalizations about "human nature," are allowed to pass unchallenged. No matter what superstitious nonsense or stereotypes or prelogical beliefs he voices, that is his inalienable privilege in a democratic classroom. These vagaries peculiar to adolescence should be heard with an indulgent smile. As the student grows up, he will transcend this naive, animistic stage.

But the child, as the poet reminds us, is father of the man, and if the schools fail to discipline the young in scientific methods of analysis and evaluation applied as far as possible to all the problems they must face in life, they will never (except for the small percentage that later attend college) receive this training. Thus we behold a curious contradiction in our educational practice: schools that are dedicated to the important purpose of

training for citizenship in a democratic order, neglect the vital task of teaching the young how to incorporate scientific methods and values into the texture of their life.

If science is to permeate the life of the student, he must not accept the achieved knowledge of the past on faith; he must be aware of how knowledge has been slowly accumulated and against what formidable psychic resistance, how it is tested, how it is periodically revised. If science is to function fruitfully in education it must become more than a branch of learning; it should be the core of all subjects. Wherever possible, the validity of science should be checked by applying it to the problems of social life. It is not enough to gain a carbon copy of the world as science sees it in the year 1944; it is vastly more important that this picture should itself be constantly tested by using it as a criterion for securing further knowledge and for meeting contingencies as they arise.

As soon as it is asserted that science must form the heart of the educative process, the listener invariably sends out a mental S. O. S. for the Science Department. The realization that the scientific discipline should inform every aspect of the learning process, that there should be no arbitrary divorce between science and the humanities, for example, has not yet taken hold. Whether or not students master all the secrets of the laboratory, they should at least have grasped the underlying significance of the scientific method, the knowledge that it can be applied effectively (though with different degrees of effectiveness) to any area of human experience, that it can be used successfully to meet the challenge of life. Every problem the student attempts to solve calls for a certain amount of exploration, logical inquiry, suspended judgment and preliminary trial, all of which culminates in a provisional synthesis. The entire procedure, if correctly followed, is scientific in nature. Every classroom, rightly conducted, is a laboratory in action.

This is what students must be led to perceive for themselves, namely, that science makes possible a more humane and enriched mode of communal living, that our individual and social affairs can be rationally managed and controlled. The understanding achieved through the enlightened use of the scientific method belongs to every adventure of thought, every field of action. Science is not reserved for specialists in science; it intimately affects the lives of all of us.

The problem facing democratic society in this age of crisis is supremely moral. Men must now decide what form of government they want, what kind of associations they wish to devise. Scientific attitudes must become ingrained in human nature and used constructively for the improvement of life in all its rich variety. To achieve this end our conception of what a truly scientific education should do and how it should do it must be radically reconstructed. The conclusion is inescapable that henceforth science must take cognizance of moral issues. As John Dewey sums up the matter in *Freedom and Culture:* "While it would be absurd to believe it desirable or possible for every one to become a scientist when science is defined from the side of subject matter, the future of democracy is allied with spread of the scientific attitude." And if the scientific attitude is to be intelligently cultivated, science education must be directed specifically and militantly to that end.

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REVIEWS

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REVIEW OF SELECTED BOOKS ON THE METHODOLOGY OF EDUCATIONAL, PSYCHOLOGICAL, AND SOCIAL RESEARCH, 1943–1944

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FIFTEEN annual bibliographies on the methodology of research have been published in the *Journal*, usually in the September issue. A review of selected books, 1940–1943, in the same area appeared in the September, 1943, number of the *Journal*. The present review covers selected publications for the past year.

GENERAL HANDBOOK OF RESEARCH METHODS

Educational Research (18) attempts within approximately one-third to one-half the usual space limits of similar books to cover the entire range of research methods. Brief chapters deal with such customary topics as: characteristics of research and research agencies, qualifications of the investigator, needed studies, survey of the literature, formulation of the problem, relation of philosophy to research, historical method, experimentation, school surveys, and reporting. The brevity of the book probably explains in part the almost complete lack of documentation (a half-dozen citations for the entire volume). The chapter bibliographies consist chiefly of general references on methodology, with few illustrative studies of particular techniques. Certain chapters are difficult to reconcile with any logically or functionally coherent classification of methodology. The chapter on "Measurement in Educational Research" for some reason deals primarily with statistical tools for analysis of data, while the chapter on "Analysis and Educational Research" is concerned with job and documentary analysis. Such chapter titles tend to overlook the importance of measurement and analysis in general as a part of research. A discussion of "Psychology in Educational Research" attempts within less than twenty pages to cover the techniques of observation, interview, introspection, questionnaire, experimentation, testing, rating, and case study. Such a chapter title tends to overlook the importance of these methods in other fields, such as sociology, social work, and education, and emphasizes the field of research rather than the technique employed.

LIBRARY USAGE AND REFERENCE WORKS

Microphotography in recent years has become the chief method of reproducing research materials and has brought about for the historian a revolution in methods of work second in importance only to the development of printing. Microphotography makes possible for local use reproduction of materials in distant libraries, original publication of research such as doctoral dissertations, and preservation of documents from the ravages of time, wear, fire, or war. The pioneer handbook on the techniques of documentary reproduction is Binkley's *Manual on Methods of Reproducing Research Materials* (Edwards Brothers, 1936).

A new book, *The Scholar and the Future of the Research Library* (16), describes the rapid growth of libraries and the attendant costs of purchase, binding, cataloguing, and storage. Past attempts at solution of the problem have been "weeding out" books, economies in method, and inter-library cooperation. The proposed solution is micro-cards, to which the major part of the discussion is devoted. The micro-card combines the microtext of the book and the corresponding catalogue card in a single entity, in other words, reproduces the micro-book on the back of the catalogue card. The author believes it possible, with improved methods of photography, to place 250 or more pages of an ordinary book on the back of a single catalogue card. This challenge is primarily to librarians, but is of real concern to school administrators, teachers, and scholars.

The papers of the seventh institute for librarians, held at the University of Chicago in the summer of 1942, have appeared under the title of *The Reference Function of the Library* (3). This problem is of especial importance because of the rapid increase in library resources, a similar growth in reference tools, and the development of special collections and departments in the library. Librarians are interested in reconsideration of reference work because of current criticism of the related subject of cataloguing, restudy of methods of training reference librarians, and the need for a sound treatment of the theory of reference work together with practical and effective procedures for use in a variety of reference situations. The book analyzes such problems in a series of papers concerned with the reference function in a variety of libraries and in the several subject-matter fields, and with administrative and personnel procedures.

Reference Books of 1941–1943 (21) is the third three-year supplement to Mudge's *Guide to Reference Books* (sixth edition). The reference works are classified under the headings of periodicals, newspapers, societies, dissertations and research projects, encyclopedias, dictionaries, philosophy, religion, social sciences, science, useful arts, fine arts, literature, biography, geography, history, governmental documents, and bibliography.

It has been a generation since Paul Monroe's *Cyclopedia of Education* (Macmillan, 1911–13) appeared in five volumes, in the days when education as a professional discipline was very young. The new *Encyclopedia of Modern Education* (17) was written for a less select audience than was Walter Monroe's *Encyclopedia of Educational Research* (Macmillan, 1941). The *Encyclopedia of Modern Education* is not limited to the research literature of education, although it is sound in the facts presented and in-

cludes well selected references. The articles were prepared by a group of competent specialists, with careful editorial coordination. The present writer had occasion to check this list of topics against the vocabulary of the forthcoming *Dictionary of Education* (McGraw–Hill, 1945), and found the range of the articles reasonably extensive. The volume deserves much better paper, binding, and format.

Some seventy-five psychiatrists, educators, and social workers collaborated in the preparation of the *Encyclopedia of Child Guidance* (22). Most of the discusions are initialed to identify the authors. The articles are considerably longer than those found in the *Encyclopedia of Modern Education*, which has been a factor in limiting the range of the topics presented. The volume has been criticized because of significant omissions, although it is admittedly difficult to present within 450 pages all the ramifications of child guidance that lead into such areas as psychology, psychiatry, pediatrics, hygiene, education, social work, and sociology. Like most of the works issued by the same publisher, the paper, binding, and format are subject to merited criticism.

As early as 1926 plans were made to meet the need for adequate definitions of library terms. Through several stages in subsequent years the project evolved into the *A.L.A. Glossary of Library Terms* (19). In addition to the technical terms used in American libraries, the volume includes selected definitions in the related fields of archives, bibliography, printing and publishing, paper, binding, illustration, and prints. From his experience in the preparation of the *Dictionary of Education* (McGraw–Hill, 1945), the reviewer is able to appreciate the large amount of time and cooperative effort that made possible this library glossary.

An essential tool for sound research and careful scientific writing is an exact terminology. Psychology has Warren's *Dictionary of Psychology* (Houghton Mifflin, 1934), and education has a *Dictionary of Education* (McGraw–Hill, 1945) in press. The approximately five thousand definitions of the *Dictionary of Sociology* (6) were prepared with the cooperation of about one hundred sociologists. Most of the definitions are initialed by the authors responsible. The work has been well done by a group of competent specialists, although the binding is far short of the durability necessary for a dictionary.

Within the past few years considerable interest has been evidenced in the history of sociology; for example, Barnes and Becker's *Social Thought from Lore to Science* (Heath, 1938), Ellwood's *History of Social Philosophy* (Prentice–Hall, 1938), and House's *Development of Sociology* (McGraw–Hill, 1936). *Origins of American Sociology* (2) analyzes the social science movement in terms of its background and ideals, the Associationist phase, the influence of Comte, the systematizing phase, the Post-Associationist phase, the Nationalist or Carey School, the Neo-Classical School with economic emphasis, the American Social Science Association, the academic phase in schools and colleges, general methodological aspects, historical method, and statistical method. This volume is a useful reference work for the several social sciences, including education.

CUMULATIVE RECORDS

A cumulative record is one maintained for an individual pupil over a period of

years, with successive additions to the record at relatively frequent intervals, as when entering marks in the school subjects at the end of a semester. Case study and counseling in the school to a large extent are dependent on the information found in the modern cumulative record.

The manual, *Cumulative Pupil Records* (1), is based on study of this problem in the senior high schools of New York City. This useful handbook suggests specific procedures and criteria for use by the school staff in study and evaluation of the local record system for pupils. The appendix includes concrete illustrations of how data from cumulative records may be interpreted, as drawn from a manual prepared for the New York high schools.

Anecdotal materials concerning behavior play a significant part in rounding out the cumulative record. A continuing individual record with emphasis on incidents and episodes of behavior that are important in the development of character or personality is known as an anecdotal behavior journal. The anecdote has been characterized as a word picture of the student in action or a verbal snapshot taken at the moment of a revealing incident.

Hamalainen (10) has sought to test the assumption that anecdotal procedures contribute to the teacher's awareness of educationally significant differences in the development of pupils. The report is based on 1,803 anecdotes relating to 119 pupils in the elementary school, as prepared by nine teachers over a period of three months. In the anecdotes more attention was given to attitudes, worthwhile activities, and social relationships than to behavior reflecting knowledge, critical thinking, skill, and aptitude. Since the latter outcomes are usually emphasized in testing programs, anecdotal records have real possibilities for supplementing the results secured from standardized tests.

MEASUREMENT AND EVALUATION

Changes in the central themes of books in the general area of educational measurement since the first world war indicate the evolution of the underlying concepts; for example, from "Standardized Testing" to "Measurement" to "Appraisal and Evaluation."

Educational Measurement and Evaluation (15) is organized according to the several types of measurement rather than in separate chapters devoted to the available tests in the various areas of instruction. The first part of the book presents the principles underlying evaluation of instructional objectives, physical aspects of pupils, mental abilities, emotional and social adjustment, attitudes, and environment; the second part describes the available instruments for appraisal in these areas. Procedures are outlined for administering the program of evaluation and for interpreting scores. The reviewer has found it preferable in using this book in his college classes to present in immediate sequence the principles and instruments for a particular type of measurement; for example, to discuss the theory underlying the development and organization of intelligence, followed by consideration of the various intelligence tests. Other topics that might well have been treated in the volume are the formulation of the particular problem for evaluation, case study, experimentation, and history as a source for appraisal of educational procedure. However, the topics included in the book are ample for a course of three semester hours in length.

It is a generation in time and a revolution in pedagogical thinking from the beginning of purely survey testing to present-day appraisal and evaluation for purposes of counseling and guidance. *Testing and Counseling in the High-School Guidance Program* (4) is a useful handbook that outlines the relation between guidance and education, essential information about pupils, statistics of testing, selection of tests, steps in initiating a counseling program, identification of pupils' problems, interviewing, and study of the community. While many specialized books have been written in such areas as guidance, statistical method, testing, interviewing, case study, and the community survey, it is helpful to guidance workers to have all these problems and techniques summarized concisely within the limits of a single manual.

The how-to-study movement received considerable impetus from Whipple's *How to Study Effectively* (Public School Publishing Co., 1916) and was further stimulated by a number of similar manuals during the next decade. However, the problem of examination-taking techniques was almost omitted from the literature, except for an occasional chapter or paragraph in the how-to-study books. *How to Pass a Written Examination* (14) presents a series of recommendations concerning emotional, physical, and mental preparation for an examination; techniques for dealing with essay and short-answer questions; and follow-up of the examination. The chapters on essay and new-type questions are the longest in the book. The style of writing follows the pattern of presenting a rule, accompanied by explanatory discussion and illustration. This handbook probably will be used more frequently in the high school and undergraduate college, although it is sufficiently simple in treatment to be usable in the upper elementary grades and meaty enough to prove helpful in the professional and graduate school.

Interest in evaluation or appraisal has been a prominent feature of many of the recent large-scale projects and national surveys; for example, the Commission on Teacher Education, the Cooperative Study in General Education, the Cooperative Study of Secondary-School Standards, the Commission on the Relation of School and College (Eight-Year Study), and the Carnegie Study of Secondary and Higher Education in Pennsylvania.

Evaluation in Teacher Education (20) was prepared for the Commission on Teacher Education. It describes and analyzes evaluative efforts in the areas of selection of students, orientation and guidance, general education, professional education, student teaching, follow-up of former students, growth of individual teachers in service, and appraisal of in-service programs. The sources of data were reports or materials from the staff of the project, consultants, cooperating institutions, conferences, and workshops. The aim of the several volumes of the Commission on Teacher Education is to describe and implement practices of outstanding merit rather than to present a systematic or exhaustive survey of current conditions in the preparation of teachers. This emphasis is well placed, in view of the earlier National Survey of Teacher Education by the U. S. Office of Education, although the Commission encounters the criticism that its chief reliance has been on observation, conference, and expert judgment rather than on methods generally considered more objective.

CASE STUDY AND BIOGRAPHY

The essential procedure of the case-study method is to take account of all pertinent aspects of one thing or situation, considering as the unit for study an individual, an institution, a community, or any group treated as a unit. Most case studies in psychology and education deal with the individual. The cycle of steps in case study and case work is determination of the status of the situation or unit of attention, collection of explanatory data, diagnosis and identification of causal factors, adjustment or treatment, and follow-up of the corrective or developmental measures. Certain of the developmental case studies are also genetic in character, as when tracing the growth of an individual child, although typically the movement of the case study is backward and that of the genetic approach is forward, in keeping with the sequence of development.

Development in Adolescence (13) is a case study of the genetic type, applying the longitudinal approach to investigation of the growth of an individual (John) over a period of seven years. John was handicapped by a variety of maladjustments rather than by great severity of any single difficulty. The case study of John is reported in chapters dealing with home background, entry into adolescence, reactions of teachers and classmates, membership in social groups, physical development, motor and mental abilities, interests and attitudes, and John's view of himself. Two chapters interpret John's "drives" or motivational tendencies and his struggle for maturity. The report is a contribution to the methodology of both case and genetic techniques.

Mental Hygiene in School Practice (9) presents the psychology of adjustment in terms of organization of the mental-hygiene services in the school program, underlying concepts of personality and behavior in the practice of mental hygiene, individual guidance and case work, mental health and personality maladjustments of the teacher, and mental hygiene in relation to community life. Numerous case studies serve as concrete applications of the principles under discussion. The appendix includes sample forms for case work and an extensive bibliography. In addition to this major contribution, the same author has prepared brief manuals for the case-work services of the school, under the titles of *The Counselor's Approach to the Home* (7) and *The Counselor's Interview with the Student* (8).

Psychology has profited by adapting from sociology and social work the techniques of the life-history document, including the life history itself, biography, autobiography, diaries, and letters. A well known illustration is Murchison's *A History of Psychology in Autobiography* in three volumes (Clark University, 1930, 1932, 1936). The life history differs from the usual formal autobiography or biography in its emphasis on the natural history of the individual, reactions to early social stimuli, evolution of a philosophy of life, personal experiences, mental and social conflicts, and adjustments.

Leta Stetter Hollingworth (11), a biography by her husband (likewise a competent psychologist), has many of the characteristics of the life history. This type of treatment was made possible as the result of more than thirty years of marriage and through preservation of many letters, personal documents, and photographs. Psychologists, educational

workers, and other students of the exceptional child will be interested in this intimate biography of an able psychologist.

REGIONAL AND INSTITUTIONAL ORGANIZATION FOR RESEARCH

Within the past decade educational investigators have become increasingly sensitive to the need for translating the results of research into practice. Outstanding examples are the Implementation Commission of the National Association of Secondary School Principals, the Cooperative Study in General Education, the Commission on Teacher Education, the Stanford Social Education Investigation, and the Commission on the Secondary School Curriculum of the Progressive Education Association.

The problem of implementation is likewise the concern of the Committee on Southern Regional Studies and Education. This committee found an abundance of research related to southern resources, but much of this information has not reached the people of the region. *Channeling Research into Education* (12) reports the cooperative plan of the committee to bring to the people of the south a knowledge of the scientific principles that govern wise use of natural, human, and social resources for the purpose of human betterment. The office of the committee is located at the University of Tennessee.

The Carnegie Foundation for the Advancement of Teaching over a long period has been interested in graduate education. In 1936 the project concerned with the Graduate Record Examination and a study of the beginnings of graduate education in the United States were initiated. Approximately a year earlier Edwards began her *Studies in American Graduate Education* (5), concerned with statistical analyses of the success of college graduates in the graduate school, and with an interview study of the characteristics of graduate programs. The visits to the twelve cooperating graduate schools were completed in March, 1939. The conclusions are that graduate education is confused as to purpose, that its administrative devices are essentially those of the undergraduate college, that it has no characteristic pattern of administration, and that the relation between teacher and student is that of the undergraduate college. War conditions have sharply curtailed graduate enrollments; now may well be the time to revise the programs and procedures of graduate schools, in anticipation of greatly increased numbers of students with new challenges at the end of World War II.

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Research News and Communications

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

N.E.A. Research Division.—The purpose of the research division is to supply the N.E.A. with data on current questions and to anticipate needs with respect to future problems. Created in 1922, the division has steadily grown in personnel and services. The present school year, 1944–45, confronts the staff with many topics of interest to the profession.

Research Bulletin.—The division's regular official bulletin will be issued four times during the school year. The first issue in October summarizes five years of state tax legislation. As the third in a series of similar studies, it indicates certain important trends: (1) the tendency to eliminate earmarked taxes and (2) the withdrawal of many states from tax fields that might impede the federal government. The latter trend bears watching as to its possible effect during the postwar period upon school revenues.

In December the bulletin will report the attitude of administrators toward several possible types of youth-training programs. The American people will have to decide between military training under the federal government, a year of national service, or some type of camping experience coordinated with the schools but under state direction. The bulletin will present some current attitudes and proposals.

The February bulletin will give a brief summary of the 1944–45 survey of salaries in city-school systems.

In April a bulletin will be issued summarizing classroom teacher attitudes toward various administrative practices. Many procedures in administration have simply grown up by "rule of thumb" procedures and become hallowed by tradition. How effective they are from the classroom teacher's point of view is an angle of considerable importance, though often little explored.

Salary Survey.—In September blanks were mailed for the biennial salary survey of city-school systems. This study has become a standard procedure during the past two decades. Not only does it result in a *Research Bulletin* previously mentioned, but also in the *Special Salary Tabulations* listing individual cities. Also detailed analyses are made of salary-schedule practices. These data are widely used in local surveys and in reports of salary-schedule committees, not to mention the many cases when they are helpful to lay groups. In spite of current manpower problems, most superintendents are cooperating in this classic of the many questionnaire studies.

Yearbooks.—To date the division has guided forty-three yearbooks, many of which have been educational mileposts. The 1944 volume of the Department of Elementary School Principals, recently

completed under the direction of Ivan A. Booker, assistant director of research, is entitled *Creative Schools*. The 1945 volume now being developed under the guidance of Hazel Davis, assistant director of research, will be devoted to the elementary school and community life. In 1946 the topic of building world understanding will be developed.

The 1945 yearbook of the American Association of School Administrator will suggest some improvements in education based upon our experiences with depression and the war. The subject of the 1946 volume will be the duties and opportunities of members of boards of education.

Legislative Studies.—The division continues its summaries of tenure, retirement, and other types of legislation. To an increasing extent, under the direction of Madaline K. Remmlein, assistant director of research, attention is being given to the significance of court cases. It is hoped that this general program will continue to be useful to local and state leaders of educational associations.

Safety Education.—With the appointment of the National Commission of Safety Education and its secretary, Robert W. Eaves, the division extends its program of supervision over the preparation of materials varying from simple units on safety in elementary schools to more complex problems of public finance.

Miscellaneous.—The division continues many of its routine collections of information and data in numerous other areas such as teacher shortage, school finance, cost of living, and other professional topics.

This statement was prepared by Frank W. Hubbard, director of the research division, N.E.A.

Cooperative Study in General Education.—The Cooperative Study in General Education, sponsored by the American Council on Education, concluded its fifth year with the summer workshop at the University of Chicago, July 28 to August 31. During the preceding year the study conducted intercollege committees devoted primarily to planning the final reports of the five years of cooperative effort to improve general education.

The final report of the study will be published by the American Council on Education in six volumes. Volume I, written by Ralph Wilson Ogan, concerns the *Services of Administration;* Volume II, by Paul J. Brower, analyzes the *Services of Student Personnel Work;* Volume III, by Harold Baker Dunkel, reports the work of the study in *The Humanities;* Volume IV, by Albert William Levi, describes the work of the study in *The Social Studies;* Volume V, by Louis M. Heil and others, presents the work of the study in *The Sciences;* Volume VI, by members of the executive committee of the study (William P. Tolley, chairman), presents an overview of the methods of the study, and its major conclusions. All six volumes have the common general title, *General Education in College.* According to the schedule of publication all the volumes will be available during the winter of 1944–45.

The study undertook to determine more clearly the needs of students that should concern general education, and also to ascertain what educational practices are effective in satisfying these needs. The reports describe what was learned through various intercollege projects, through work in particular colleges, and through cooperative work of the respective col-

leges with the central staff of the study. Among the major topics discussed in the reports are such matters as the following: effecting humanized working relations and coordinated efforts to attain educational objectives; identifying the needs of students through the coordinated use of fact-finding devices in terms of a philosophy of education; developing a philosophy as to the role in general education of the major fields of subject matter; clarifying the general and specific aims appropriate to the various fields of subject matter, to student personnel activities, and to educational administration; and appraising major trends in general education, especially in the cooperating colleges of the study.

Colleges participating in the study for the five-year period are the following: Allegheny College, Antioch College, Ball State Teachers College, Hendrix College, Iowa State College, Little Rock Junior College, University of Louisville, Michigan State College, Northwest Missouri State Teachers College, Muskingum College, Park College, Pasadena Junior College, College of St. Catherine, Stephens College, and Talledega College. Colleges participating during the first three-year period are the following: Bethany College (W. Va.), University of Denver, Hiram College, Mills College, and Olivet College. Colleges participating during the last two years of the study are the following: Centre College of Kentucky, Fisk University, and Macalester College. These three colleges participated for a slightly longer period than two years.

This progress report was prepared by Ralph W. Ogan, associate director of the project.

Southern Regional Studies.—In April, 1943, the Committee on Southern Regional Studies and Education was appointed by the American Council on Education, with Maurice F. Seay of the University of Kentucky as chairman. This group of southern educators and research specialists undertook a study of the resource use needs of the southern area, the research materials bearing on these needs, the adequacy of and methods for improving educational materials bearing on resources and their use, and the possibilities of inter-agency and interstate cooperation. In addition to making this study, and as a part of it, the committee sponsored the first Gatlinburg conference in August, 1943, for educational and research leaders, who devoted two weeks to the evaluation of materials and the identification of problems to be faced in developing programs for more effective research translation and resource education.

The committee found that there is an abundance of research related to southern resources, but this information has not been adequately channeled to the people of the region. It concluded that southern regional development demands a new working relationship between research and education. Specifically, the committee identified the following as essentials, if research on southern resources is to serve the region's people as a lever to reach higher levels of living: (1) integration of resource education that will emphasize the basic unity of the natural environment, the scientific necessity for man to use the environment in such a manner as to make society fit harmoniously into nature's balance, and the types of resource use that will achieve a balanced resource consumption; (2)

production and use of instructional materials based on appraisal of learning habits, abilities, and attitudes of the people; (3) improvement of the machineries for translating the large body of research information for public use and for preparing and distributing instructional materials based on this information; (4) intrastate coordination among educational systems and agencies working with or studying southern resources; and (5) establishment of machinery to insure cooperation between the states and with the regional and federal fact-finding and educational agencies.

The story of this exploration is told in a recently-published volume, *Channeling Research Into Education*,[1] which report also contains the committee's recommendation for the creation of a regional organization with responsibility for facilitating the projection and execution of programs in resource use education and research translation through achieving coordinated action of existing state and regional agencies. In May, 1944, the committee was authorized by the American Council on Education to set up and direct such a central service agency to work in an advisory relationship with state and regional agencies in the field of resource study and research translation. Thirteen southern states and a number of regional agencies are now working together in this effort to bring to the people of the region a knowledge of the scientific principles that govern the wise use of natural, human, and social resources to the end of human betterment.

[1] John E. Ivey, Jr., *Channeling Research Into Education*. Washington: American Council on Education, 1944. Pp. xviii + 187.

As a part of this action program, one hundred southern leaders, including representatives from twelve states and fifteen regional agencies, participated in the second Gatlinburg conference in September, 1944. Their time and effort were devoted chiefly to planning for closer coordination of interagency relations within the states and with regional agencies, and to the development of specific procedures to implement research translation into educational materials, teacher training in use of such materials, infusion of resource study into existing curriculums, improvement of materials produced by non-school agencies, development and operation of materials bureaus, introduction of resource education into institutions of higher learning, and production of a newsletter on regional resource education in the south. In order to establish a point of departure, one group working as a committee of the conference defined "resource use education" as comprehending: (1) a philosophy relative to relationships between natural, human, and social resources as involved in the satisfaction of human needs; (2) facts and problems relating to resources, their use and conservation; and (3) motivation and methods of working toward optimum use of resources.

State representatives at the second Gatlinburg conference included deans of education, college presidents, state directors of planning boards, conservation departments, education associations, teacher training, and research specialists in economics, forestry, agriculture, biology, population, and labor problems. The regional agencies included such groups as the Southern Association of Colleges and Secondary Schools, Tennessee Valley Au-

thority, Southern Conference on Teacher Education, Soil Conservation Service, Southern States Work Conference, Southern Rural Life Council, and others. A complete report of this conference will be published shortly after the first of the coming year, 1945. In the meantime, the committee and the state and regional agencies are moving ahead rapidly in the development of programs in resource education and research translation, and the suggestions and recommendations of the conference group are being applied in this cooperative task.

This statement was prepared by John E. Ivey, Jr., executive secretary of the committee.

Rutgers Research Council.—Rutgers University has announced the creation of a research council to strengthen and promote research throughout the university. A special research fund has been placed at the disposal of the council and applications for grants for next year are now being considered.

The council contemplates the development of a well-balanced research program for the university in business, the social studies, the humanities, and the sciences. The council consists of nine members, representing various colleges and fields of learning in the university.

The director is William H. Cole, professor of physiology and biochemistry at Rutgers, who will serve in a staff relationship to deans, department heads, and faculty members concerning research programs, and will represent the university in developing reciprocal arrangements with governmental, industrial, business, and professional institutions outside the university.

Emphasis will be placed upon cooperative research between related departments in the university, and between outside organizations and university departments.

Terminal Education.—During the past year the American Association of Junior Colleges, through its Commission on Terminal Education, has concluded its study of terminal education, which was begun in 1940 under a subsidy from the General Education Board. Although the war necessitated certain changes in the original plan for the project, the general objectives were pursued to completion.

Activities of the last year, for the most part, have related to a general program of implementing the results of the study. The nine institutions at the junior-college level that had undertaken special individual studies on techniques relating to terminal-education programs early in the year completed their projects and submitted final reports to the administrative committee of the commission. These institutions and their special projects are:

Bakersfield Junior College: Guidance Procedures with Oncoming Junior-College Students

Los Angeles City College: Aptitude Testing for Admission to Semi-Professional Curriculums

Meridian Municipal Junior College: A Program of Diversified Occupations

Pasadena Junior College: Placement, Follow-Up, and Continuation Training Study

Rochester Athenaeum and Mechanics Institute: Cooperative Work Programs

San Francisco Junior College: The Community Survey as a Basis for Establishing Terminal Curriculums

Scranton-Keystone Junior College: The Utilization of Community Resources

Weber College: The Development of Terminal Courses for the Junior College

Wright Junior College: Evaluating the Results of Terminal Education

From the reports of these studies and the information available from other aspects of the general study, the administrative committee set to work on the job of preparing a final report of the five-year project, which will be published in book form by Harper and Brothers in the spring of 1945. It will be divided into two parts. The first part will be devoted to a general discussion of the need for and principles involved in the organization of an adequate terminal program. The second part will be a compilation of practices and materials that will serve as a guide to teachers and administrators in developing and executing terminal programs.

Meanwhile, the commission published in the early fall of 1944 a preliminary pamphlet, entitled *A Challenge to Junior College Administrators and Instructors*. This eight-page illustrated publication announces the forthcoming final report and at the same time sets forth certain facts that are important to administrators and teachers.

During 1944 the commission also sponsored four regional conferences for junior-college administrators in Boulder, Colorado; Atlanta, Georgia; Chicago, Illinois; and New York City. The primary purpose of these conferences was to extend the results of the study just completed to administrators as they face the development of post-war terminal programs. Each meeting was attended by approximately seventy-five key administrators.

This news item was forwarded by Leland L. Medsker, secretary of the administrative committee in charge of the project.

Alabama Educational Survey.—By legislative act in 1943 the Alabama Educational Survey commisssion was created "to make a complete and detailed study of Alabama's public school system, including the common schools, the state teachers colleges, and other institutions of higher learning . . . to make a complete report of its findings; and to present specific recommendations for the improvement of the school system." Governor Chauncey Sparks appointed seven leading citizens of Alabama to the commission, with Hubert Searcy, president of Huntingdon College, Birmingham, as chairman. The commission was authorized to employ a director of research, an adequate staff, and consultants. Maurice F. Seay of the University of Kentucky was appointed as director of research.

The survey staff began its work by holding meetings with the presidents and deans of the state colleges and of the University of Alabama, with the superintendent of education and his division heads, with officers of the Alabama Education Association, and with teachers and laymen from selected groups. The purpose of these meetings was to discover the educational problems of the state.

Committees were formed to work on some of these problems. One committee has listed the recommendations of two previous state surveys and has indicated what action was taken on the recommendations. Another group is studying the

resources of the state in relation to educational need and the state's ability to support education. Other committees are investigating such problems as the state curriculum development program and the goals for education, as expressed in legislation, regulations, publications, and activities of the state department and of selected local communities.

Specialists on the staff are working on such special phases of the survey as the organization and control of higher education, functions of the state department of education, availability and effectiveness of elementary and secondary education, adequacy of the program of vocational education, and financial support of education at the different levels. Members of the staff and consultants are visiting every public institution of higher education in the state and selected elementary and secondary schools, to study them in the light of problems already presented or to discover other problems. A testing program is being administered to pupils in selected elementary and secondary schools. Besides the survey staff and the consultants, many people in the state of Alabama are contributing to the study. Teachers, newspaper editors, and boards of education have answered questionnaires submitted to them by the staff.

The survey staff will submit its report to the commission by January 1, 1945. This progress report was prepared by the director of research.